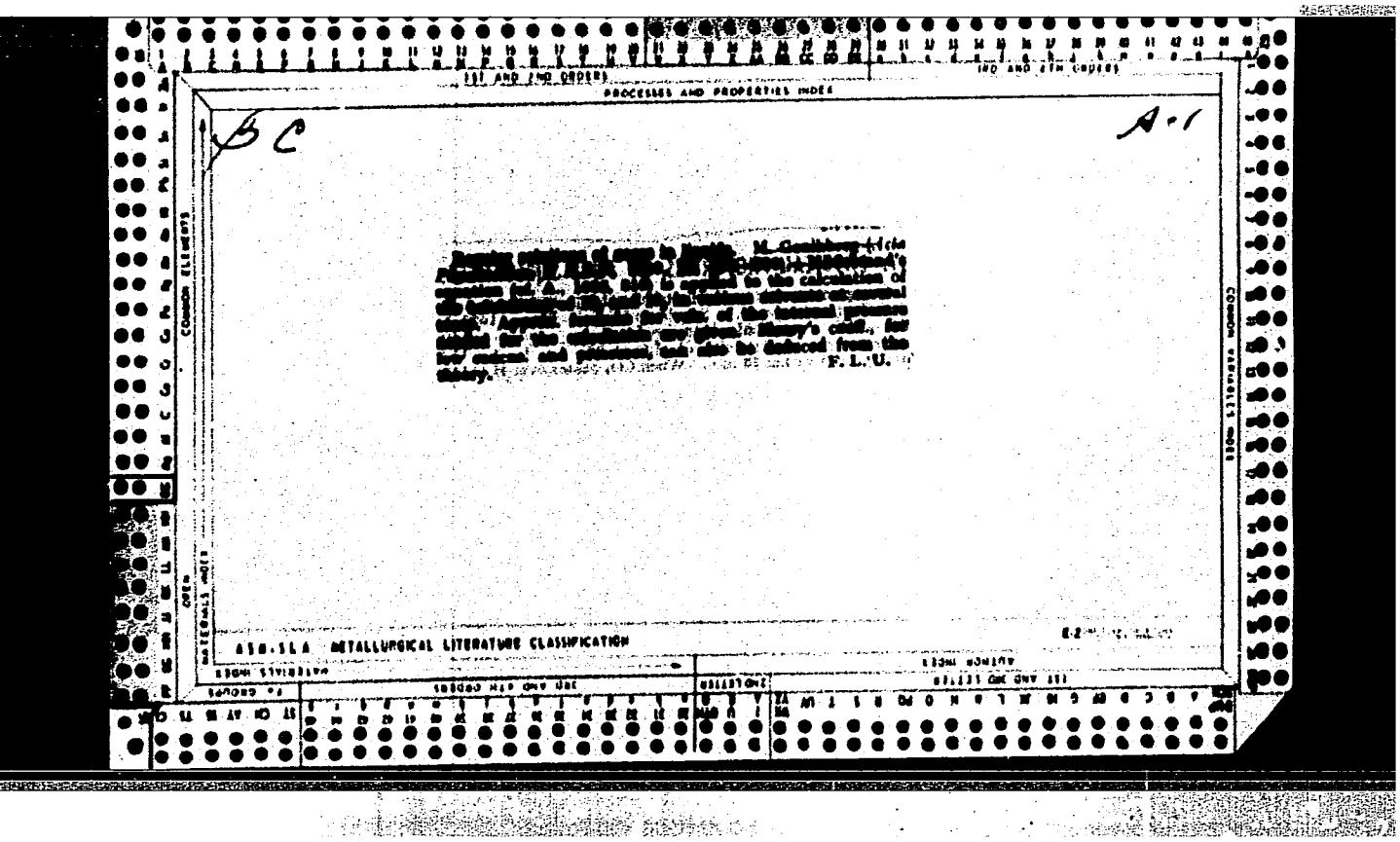


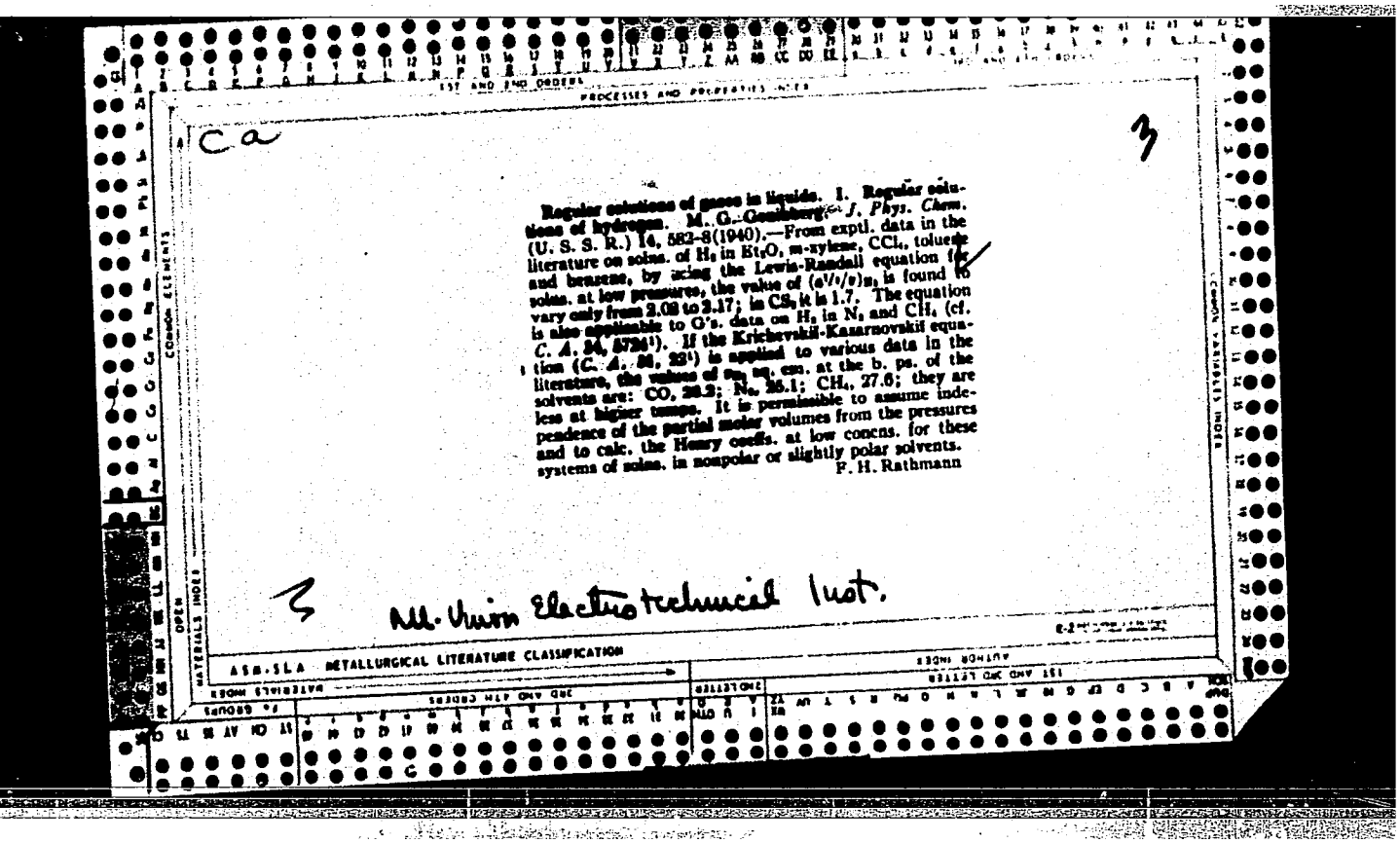
1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX 3RD AND 4TH ORDERS

2

Regular solutions of gases in liquids. II. More concentrated solutions of hydrogen at high pressures. M. G. Gonikberg. *Acta Physicochim. U. R. S. S.* 12, 921-30 (1940) (in German); cf. *C. A.* 35, 3004[?].—An equation is given for the equil. in systems gas-non-polar liquid at high concns. and pressures. The equation is applied to solns. of H_2 in liquid N_2, CO, CH_4 and C_2H_6.

H. C. Thomas

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Ca

3

Regular solutions of gases in liquids. I. Regular solutions of hydrogen. M. G. Gonikberg. *J. Phys. Chem.* (U. S. S. R.) 14, 582–8(1940).—From exptl. data in the literature on solns. of H_2 in Et_2O, m-xylene, CCl_4, toluene and benzene, by using the Lewis-Randall equation for solns. at low pressures, the value of $(a^{1/3}/v)_2$ is found to vary only from 2.08 to 2.17; in CS_2 it is 1.7. The equation is also applicable to O's. data on H_2 in N_2 and CH_4 (cf. *C. A.* 34, 5724[1]). If the Krichevskii-Kasarnovskii equation (*C. A.* 35, 23[1]) is applied to various data in the literature, the values of sq. sq. cm. at the b. pa. of the solvents are: CO, 28.2; N_2, 28.1; CH_4, 27.6; they are less at higher temps. It is permissible to assume independence of the partial molar volumes from the pressures and to calc. the Henry coeffs. at low concns. for these systems of solns. in nonpolar or slightly polar solvents.
P. H. Rathmann

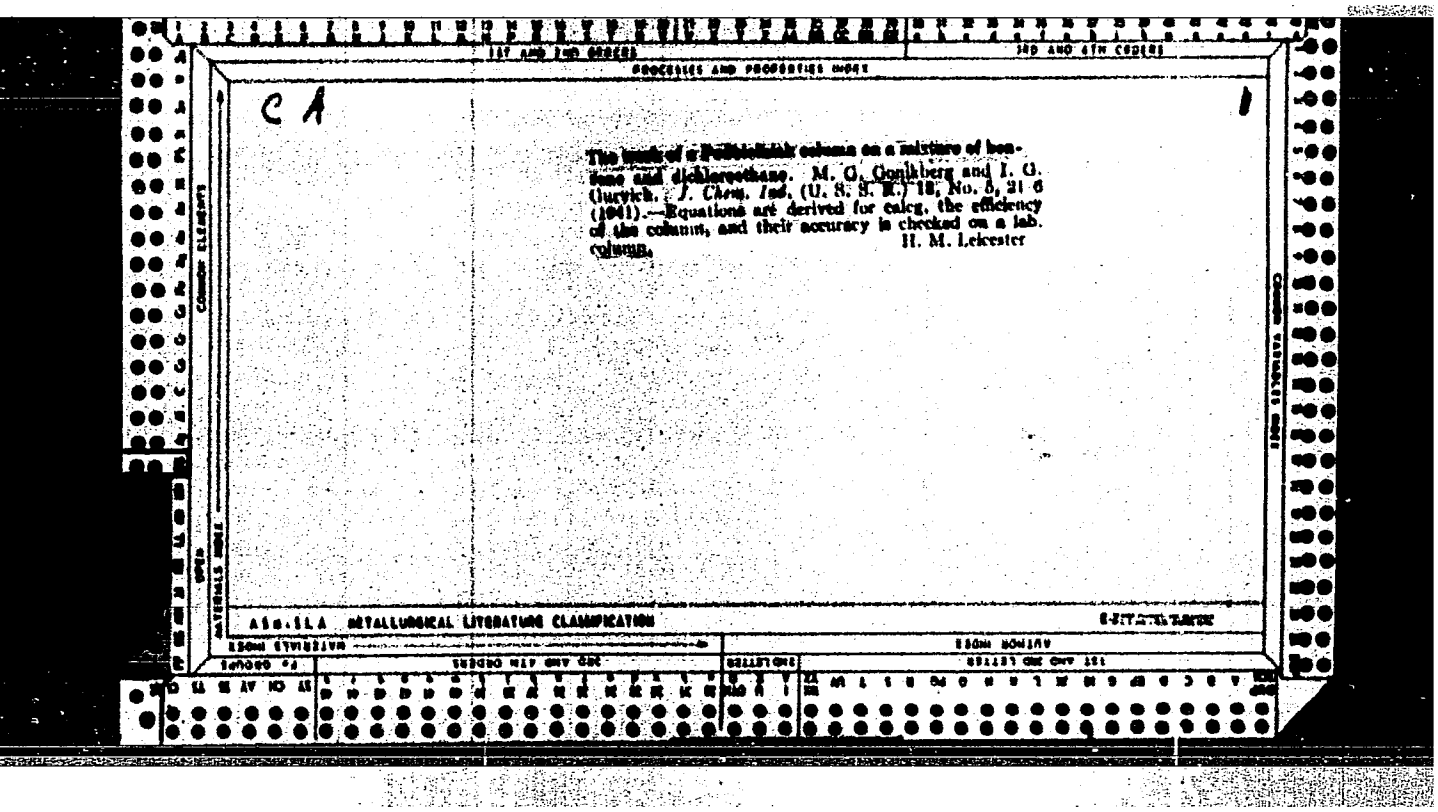
3 Mt. Union Electrotechnical Inst.

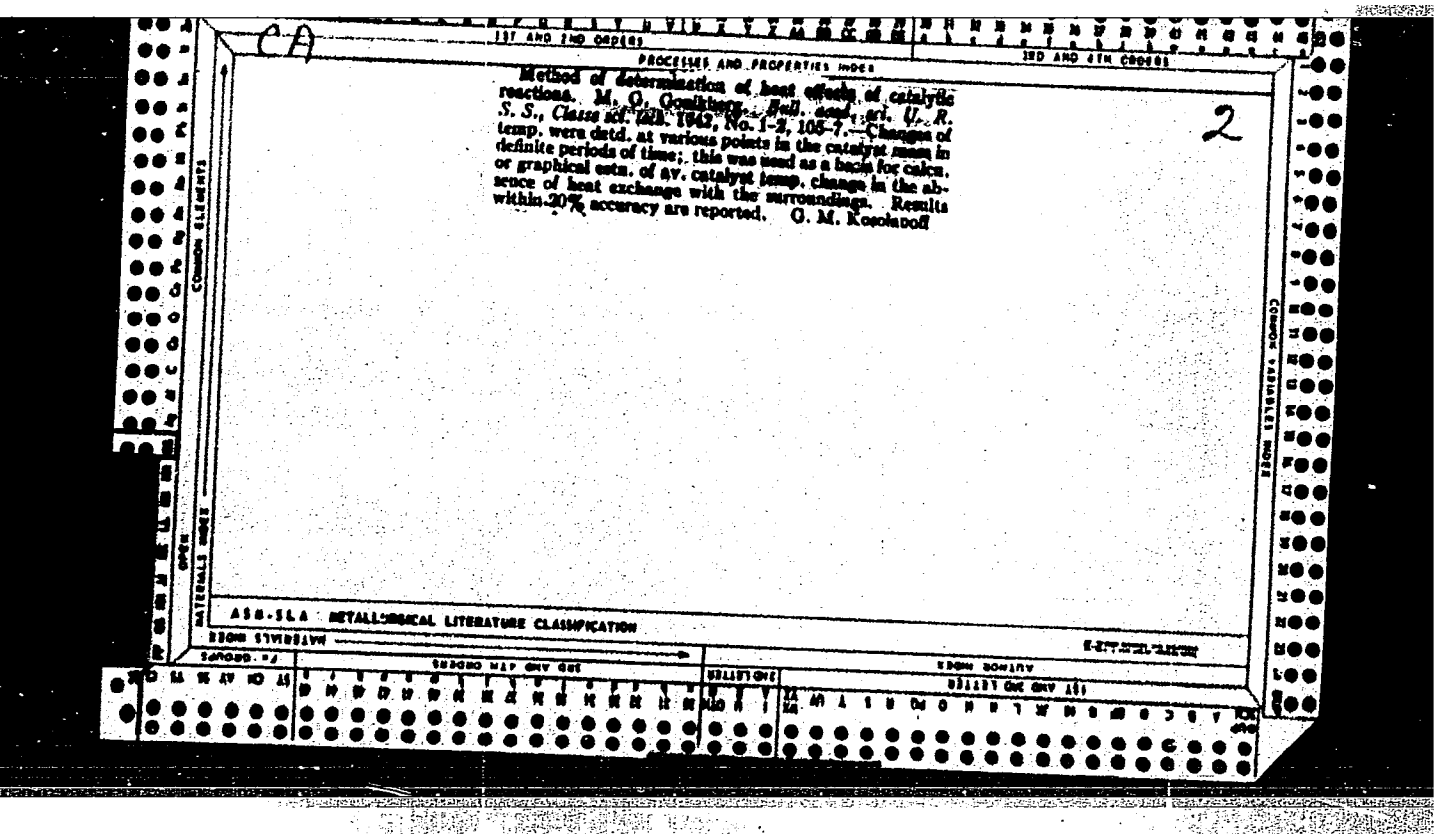
GONIKBERG, M.G.; FASTOVSKIY, V. G.

All-Union Electrotechnical Institute, (-1940-)

"The Solubility of Gases in Liquids at Low Temperatures and High Pressures", Part IV. "The Solubility of Helium in Liquid Methane at 90.3 Degrees K and 106.0 Degrees K and Pressures up to 160 Atmospheres".

Zhur. Fiz. Khim, Vol. 14, No. 8, 1940





CA

2

PROCESSES AND PROPERTIES INDEX

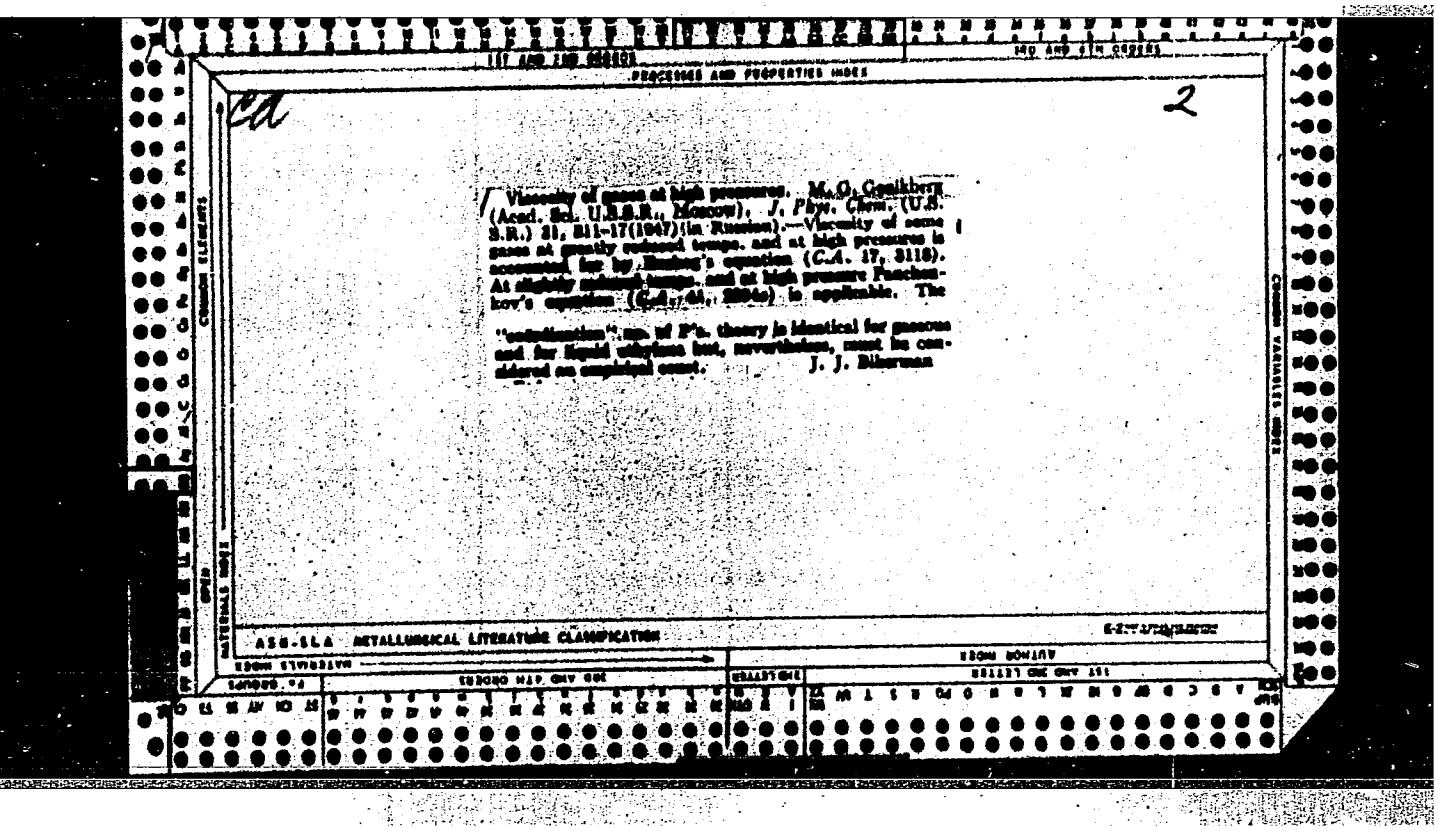
Method of determination of heat effects of catalytic reactions. M. G. Gonikberg. *Bull. acad. sci. U. R. S. S., Classe sci. chim.* 1942, No. 1-2, 105-7.—Changes of temp. were detd. at various points in the catalyst mass in definite periods of time; this was used as a basis for calcn. or graphical estn. of av. catalyst temp. change in the absence of heat exchange with the surroundings. Results within 20% accuracy are reported. G. M. Kosolapoff

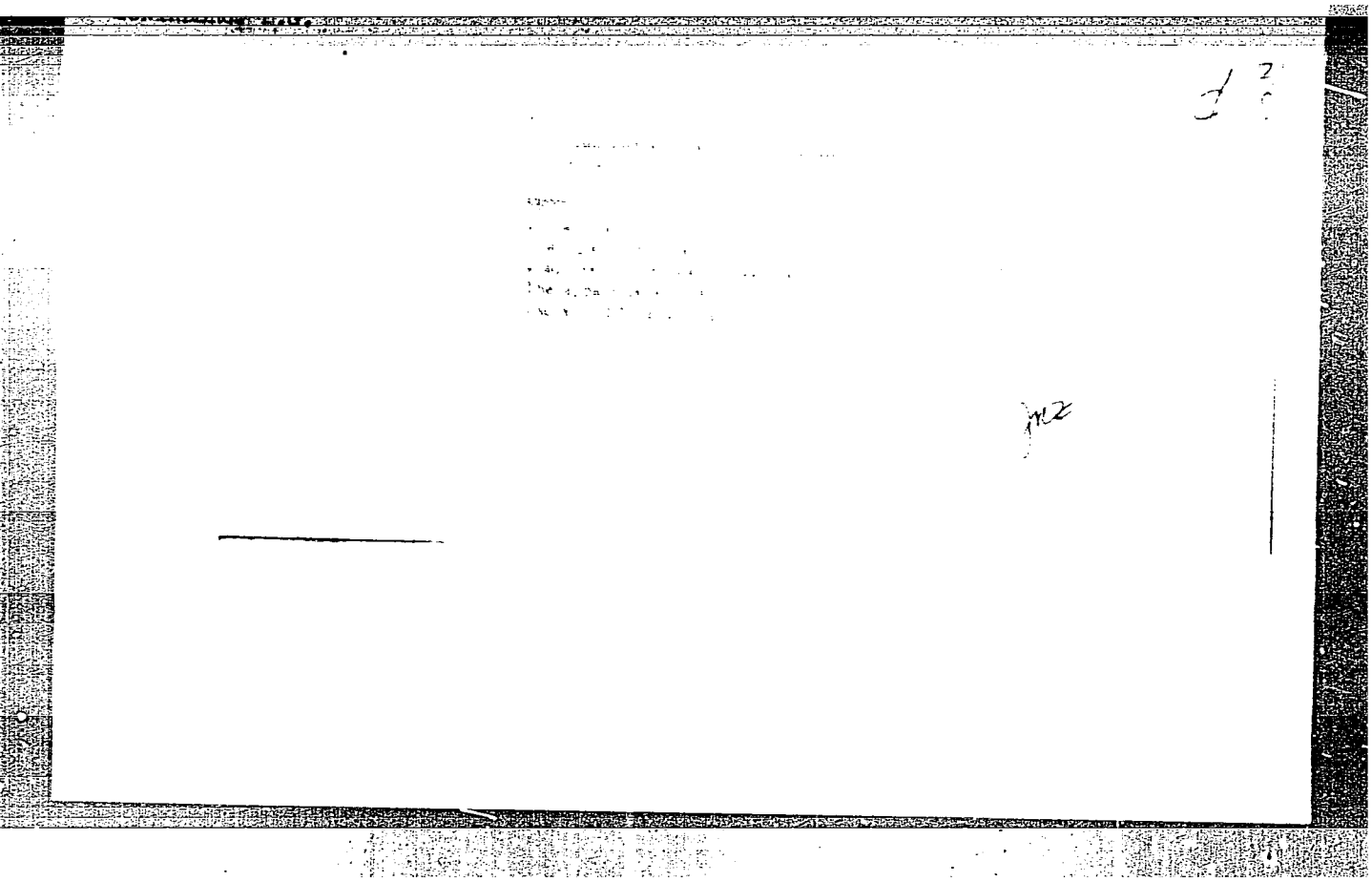
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

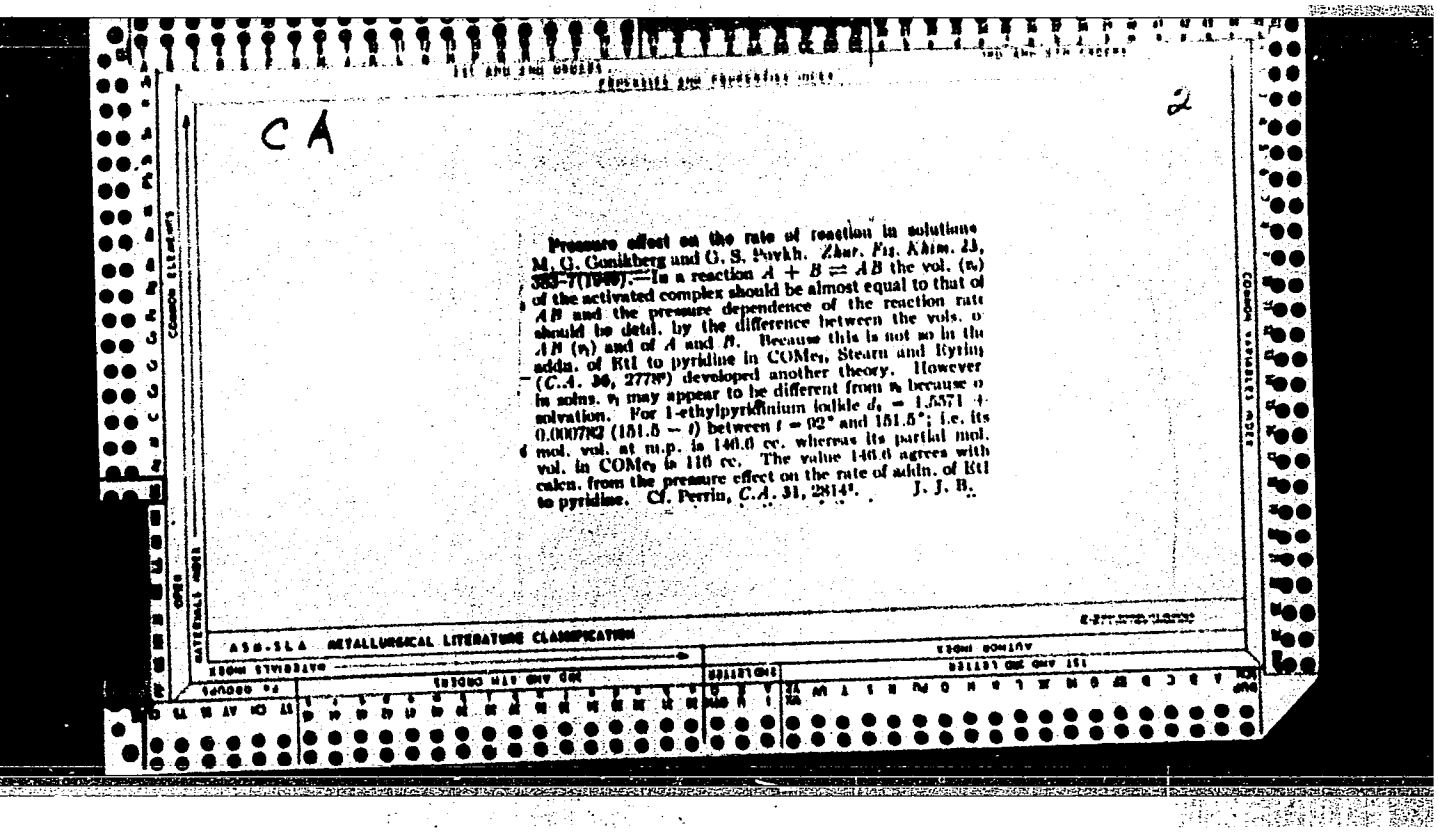
GONIKBERG, M. G. Dr. Chem. Sci.

Dissertation: "Investigation of the Viscosity of Compressed Gases and Their Solubility in Liquids." Sci Res Order of the Labor Red Order Physiochemical Inst imeni L. Ya. Karpov, 9 Jun 47.

SO: Vechernyaya Moskva, Jun, 1947 (Project #17836)







CA

2

Pressure effect on the rate of reaction in solutions. M. G. Gonikberg and G. S. Pavkh. *Zhur. Fiz. Khim.* 23, 383–7(1949).—In a reaction $A + B \rightleftarrows AB$ the vol. (v_t) of the activated complex should be almost equal to that of AB and the pressure dependence of the reaction rate should be detd. by the difference between the vols. of AB (v_1) and of A and B. Because this is not so in the addn. of RtI to pyridine in $COMe_2$, Stearn and Eyring (*C.A.* 30, 2778⁸) developed another theory. However in solns. v_1 may appear to be different from v_t because of solvation. For 1-ethylpyridinium iodide $d_t = 1.5571 + 0.000782\ (151.5 - t)$ between $t = 92°$ and 151.5°; i.e. its mol. vol. at m.p. is 146.0 cc. whereas its partial mol. vol. in $COMe_2$ is 116 cc. The value 146.0 agrees with calcn. from the pressure effect on the rate of addn. of RtI to pyridine. Cf. Perrin, *C.A.* 31, 2814⁸. J. J. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

GONIKBERG, M.G.

60/49T111

USSR/Physics
Systems, Liquid-Gas
Equilibrium

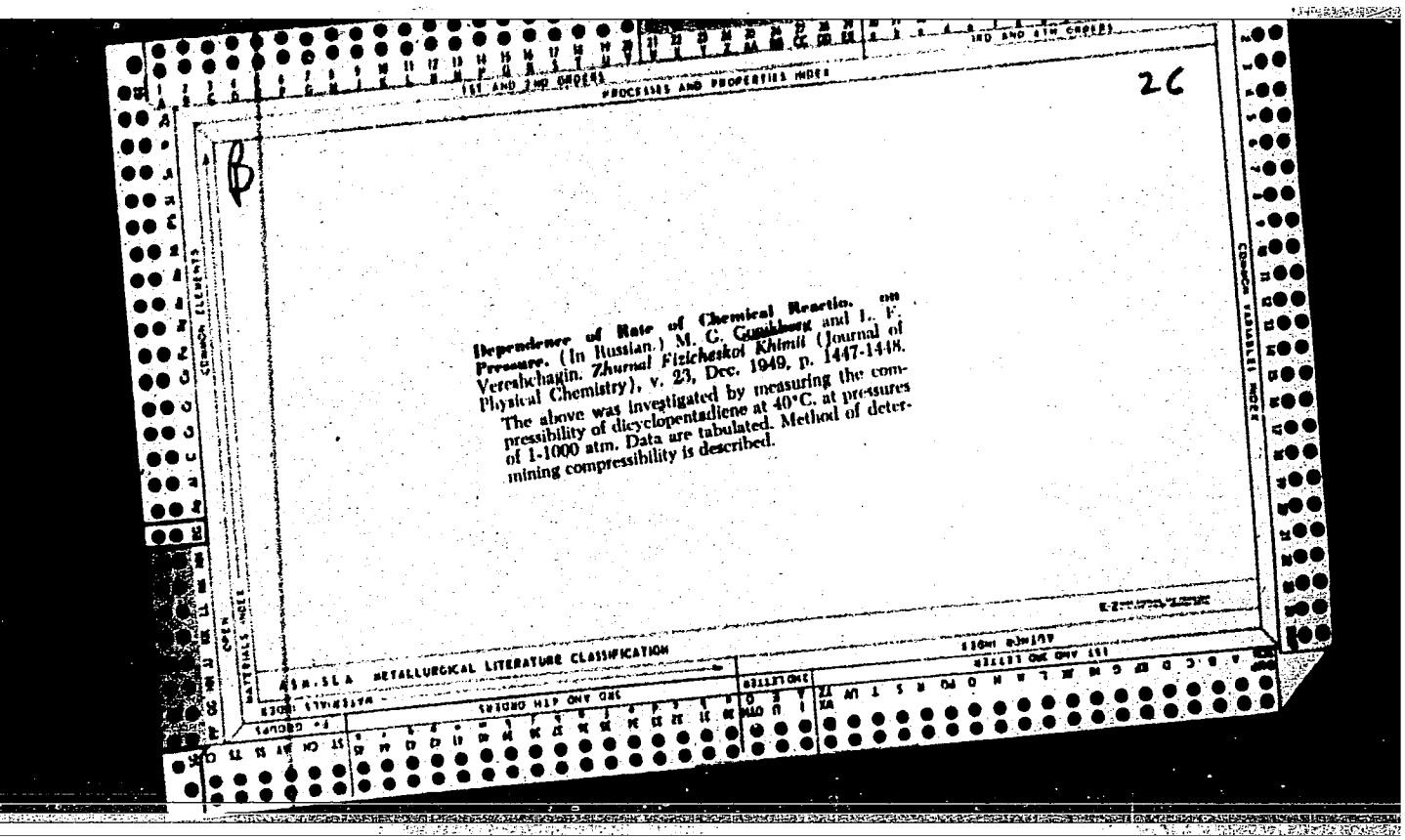
Jul 49

"Liquid-Gas Phase Equilibria Under Pressure," M. G. Gonikberg, Inst of Org Chem, Acad Sci USSR, Moscow, 1 3/4 pp

"Zhur Fiz Khim" Vol XXIII, No 7

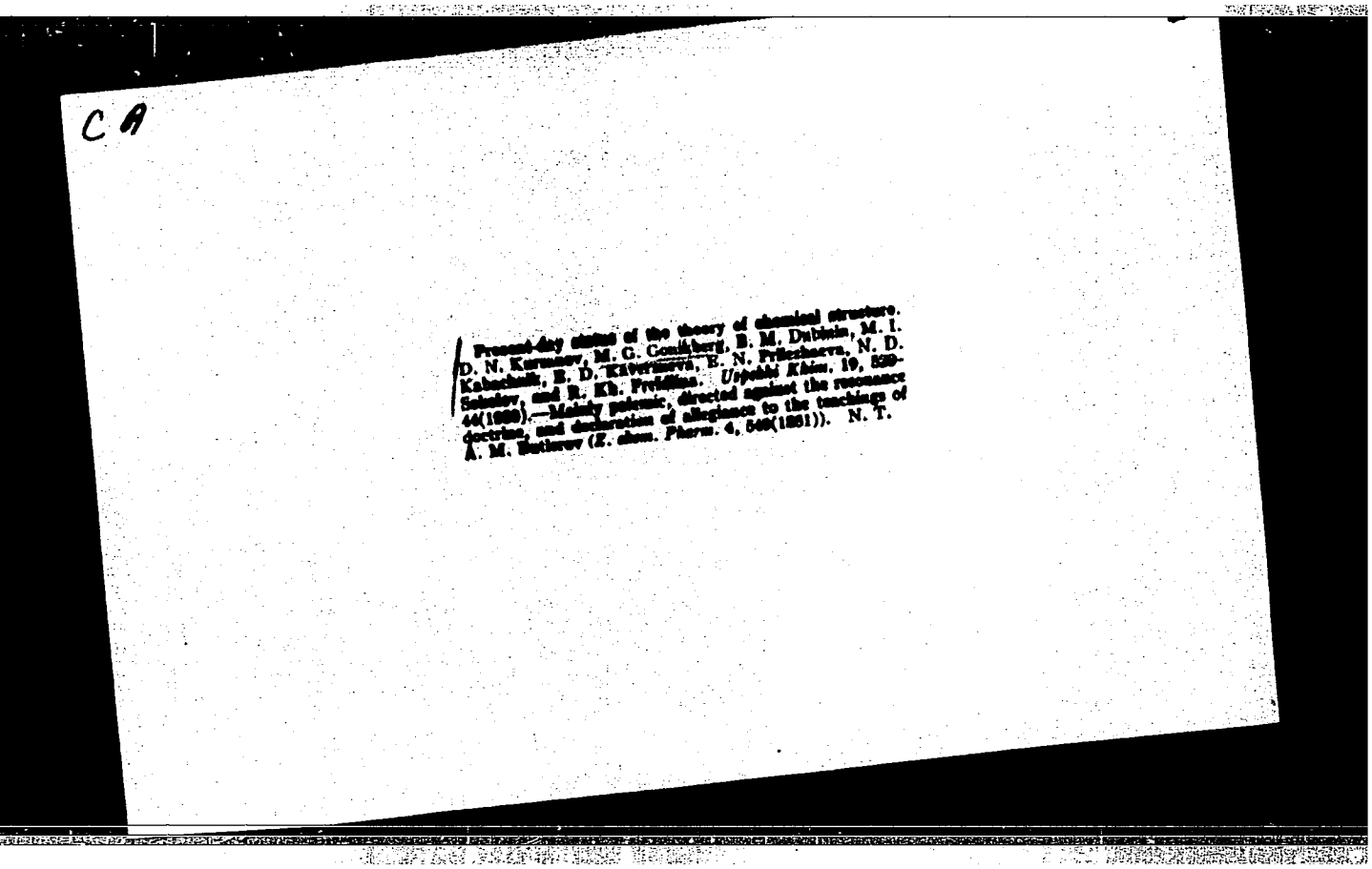
Shows that Krichevskiy and Il'inskaya's equation confirms Krichevskiy and Yefremova's experimental material. Submitted 10 Oct 48.

60/49T111



Dependence of Rate of Chemical Reactio. on Pressure. (In Russian.) M. G. Gonikberg and I. F. Vereshchagin. *Zhurnal Fizicheskoi Khimii* (Journal of Physical Chemistry), v. 23, Dec. 1949, p. 1447-1448.

The above was investigated by measuring the compressibility of dicyclopentadiene at 40°C. at pressures of 1-1000 atm. Data are tabulated. Method of determining compressibility is described.



CA

Present-day status of the theory of chemical structure. D. N. Kursanov, M. G. Gonikberg, B. M. Dubinin, M. I. Kabachnik, E. D. Kiverinova, E. N. Prilezhaeva, N. D. Sokolov, and R. Kh. Freidlina. *Uspekhi Khim.* 19, 529-44(1950).—Mainly polemic, directed against the resonance doctrine, and declaration of allegiance to the teachings of A. M. Butlerov (*E. chem. Pharm.* 4, 549(1861)). N. T.

USSR/Chemistry - Hydrocarbons; Jan/Feb 52
Isomerization

"Isomerization of Alkanes in Presence of $AlCl_3$ Under Hydrogen Pressure. I. Isomerization of n-Hexane," M. G. Gonikberg, A. Ye. Gavrilova, B. A. Kazanskiy, Inst of Org Chem, Acad Sci USSR

"Iz Ak Nauk, Otdel Khim Nauk" No 1, pp 157-162

Under elevated hydrogen pressure, cracking is brought to a min and the formation of so-called "lower layers" in the reaction product is avoided altogether. Obtained yields of hexane isomers corresponding to 80% of the original n-hexane.

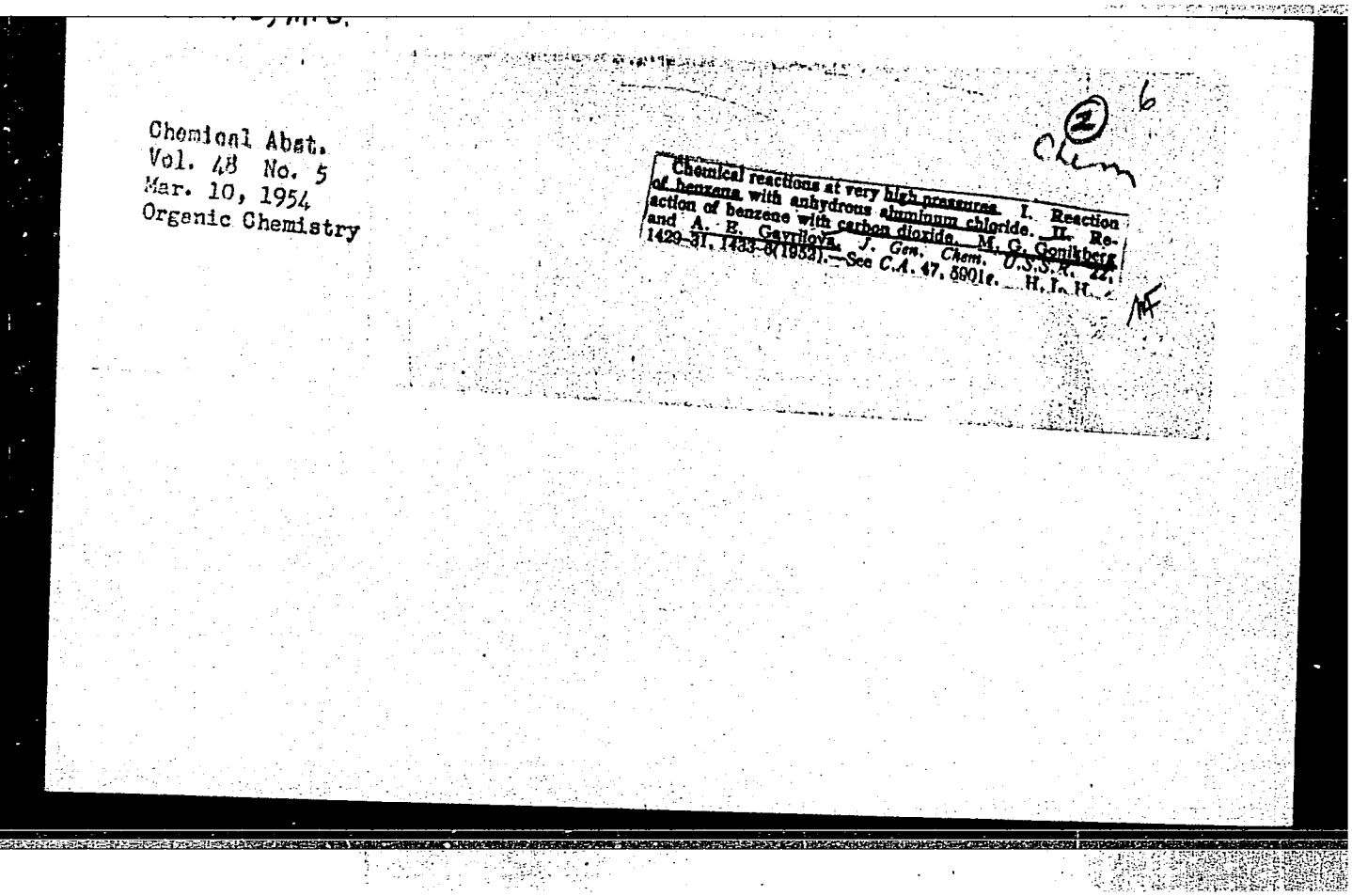
208T13

USSR/Chemistry - Hydrocarbons, Jan/Feb 52
Isomerization (Contd)

Increasing the hydrogen pressure slows down the isomerization process. Isomerization proceeds in stages, with 2-methylpentane apparently being formed as an intermediate product in the formation of 2,2-dimethylbutane. Presents some general theories explaining the above process.

208T13

GONIKBERG, M. G.



Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Organic Chemistry

Chemical reactions at very high pressures. I. Reaction of benzene with anhydrous aluminum chloride. II. Reaction of benzene with carbon dioxide. M. G. Gonikberg and A. R. Gavrilova. *J. Gen. Chem. U.S.S.R.* 22, 1429-31, 1433-8 (1952). See *C.A.* 47, 5901e. H. J. H.

GONIKBERG, M.G.; VERESHCHAGIN, L.F.

Polymers and Polymerization

Effect of pressure on the rate of thermal polymerization. Zhur.fiz. khim. 26 no. 3, 1952

9. Monthly List of Russian Accessions, Library of Congress, September 1952, Uncl.

GONIKBERG, M. G. 234T3

USSR/Chemistry - Hydrocarbons; Fuels 1 Mar 52

"Isomerization of Methylcyclopentane in the Presence of Aluminum Chloride Under Pressure," M. G. Gonikberg, A. F. Plate, A. Ye. Gavrilova, Inst of Org Chem, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol 83, No 1, pp 81-83

Finds that one of the intermediate reactions in the isomerization of methylcyclopentane under pressure using $AlCl_3$ as a catalyst is dehydrogenation. Presented by Acad B. A. Kazanskiy 28 Dec 51.

234T3

GONIKBERG, M. G.

USSR/Chemistry - Polymerization 11 Sep 52

"The Theory of Stepwise Polymerization Under Pressure," M.G. Gonikberg, Inst of Org Chem, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol 86, No 2, pp 297-299

The effect of pressure on the equil and rate of stepwise polymerization, i.e., of monomer uniting with dimer and dimer with trimer, etc., was studied. When the system is not in a state of equil, increasing the pressure results in a gradual increase of mol wt of the polymer. Presented by Acad B. A. Kazanskiy 8 Jul 52.

235T22

GONIKBERG, M. G.

"The Chemical Equilibrium and the Rate of Reaction Under High Pressure," by M. G. Gonikberg, published by Acad. of Sci. USSR Publishing House, Moscow, 1953.

(One of two cards)

GONIKBERG, M. G.

The first part of the book gives a brief account of the effects of high pressure on the equilibrium of chemical reactions in homogeneous and heterogeneous systems, as well as the catalytic reactions. The second part contains the kinetics of chemical reaction under high pressure. The third part analyses the effect of high pressure on the composition of the products of complex reactions.

SO: D-38581

(One of two cards)

Effect of pressing on the activity and ... of alumina molybdena catalysts. O. D. Sterligov, ...onikberg, A. M. Rubinshtein and ... [illegible]
... [illegible] 47 [illegible]

GONIKBERG, M. G.

USSR/Chemistry - Catalysts Jan/Feb 53

258T3

"The Effect of Compression Pressure on the Activity and Structure of the Alumomolybdenum Catalyst," O. D. Sterligov, M. G. Gonikberg, A. M. Rubinshteyn and B. A. Kazanskiy, Inst of Org Chem, Acad Sci USSR

Iz Ak Nauk SSSR, OKhN, No 1, pp 28-36

The authors studied the effect of the degree of compression pressure (from 2,000 to 20,000 atm) on the structure of the compressed alumomolybdenum catalyst and on its productivity, specific activity, and stability in the reactions involving the dehydrocyclization of n-heptane and the dehydrogenation of cyclohexane. They detd that an increase in the compression pressure leads to an increase in productivity and a decrease in the specific activity of the catalyst (in an equal degree for both reactions studied). They also detd that the stability of the compressed alumomolybdenum catalyst increases with an increase in the compression pressure (also in an equal degree for both reactions studied). An X-ray examination revealed no change in the primary (X-ray) structure of the catalyst after it had been subjected to a high hydrostatic pressure.

258T3

GONIKBERG, M.G., doktor khimicheskikh nauk.

Polymorphic transformations under high pressure. Priroda 42 no.12:85-87 D '53. (MLRA 6:11)

1. Institut kristallografii Akademii nauk SSSR. (Allotropy)

USSR/Chemistry - Hydrocarbons, 21 Mar 53
Cracking

"Thermal and Catalytic Cracking of Paraffin Hydrocarbons Under High Pressure," M. G. Gonikberg, A. Ye. Gavrilova, and Acad B. A. Kazanskiy, Inst of Org Chem, Acad Sci USSR

DAN SSSR, Vol 89, No 3, pp 483-486

Studied the effect of high pressure on the rates of thermal and catalytic cracking of n-heptane and n-hexane. The increase in the rate of cracking of paraffin hydrocarbons with increasing

272T2

pressure is limited to the region of low pressures, while at high pressures (1000-1300 atm) a decrease in the rate of thermal cracking is observed. In catalytic cracking, the rate is increased at high pressures. It is assumed that at high pressures the hydrocarbon is adsorbed to a greater extent on the catalyst and hence reacts with greater velocity.

272T2

GONIKBERG, M. G.

USSR/Physics - Sn and Pb Melting Points 11 Aug 53

"Melting Temperature of Tin and Lead Under Pressures up to 34 000 kg/cm^2," V. P. Butuzov and M. G. Gonikberg

DAN SSSR, Vol 91, No 5, pp 1083, 1084

Expound results of measurements of m.p. of Sn and Pb at pressures of 34 000 kg/cm^2. Exptl data are illustrated in graphs and tables. Present work extends the range of temps of phys-chem measurements at high pressures. Presented by Acad P. L. Kapitsa 13 Jun 53.

266T108

GONIKBERG, M.G.

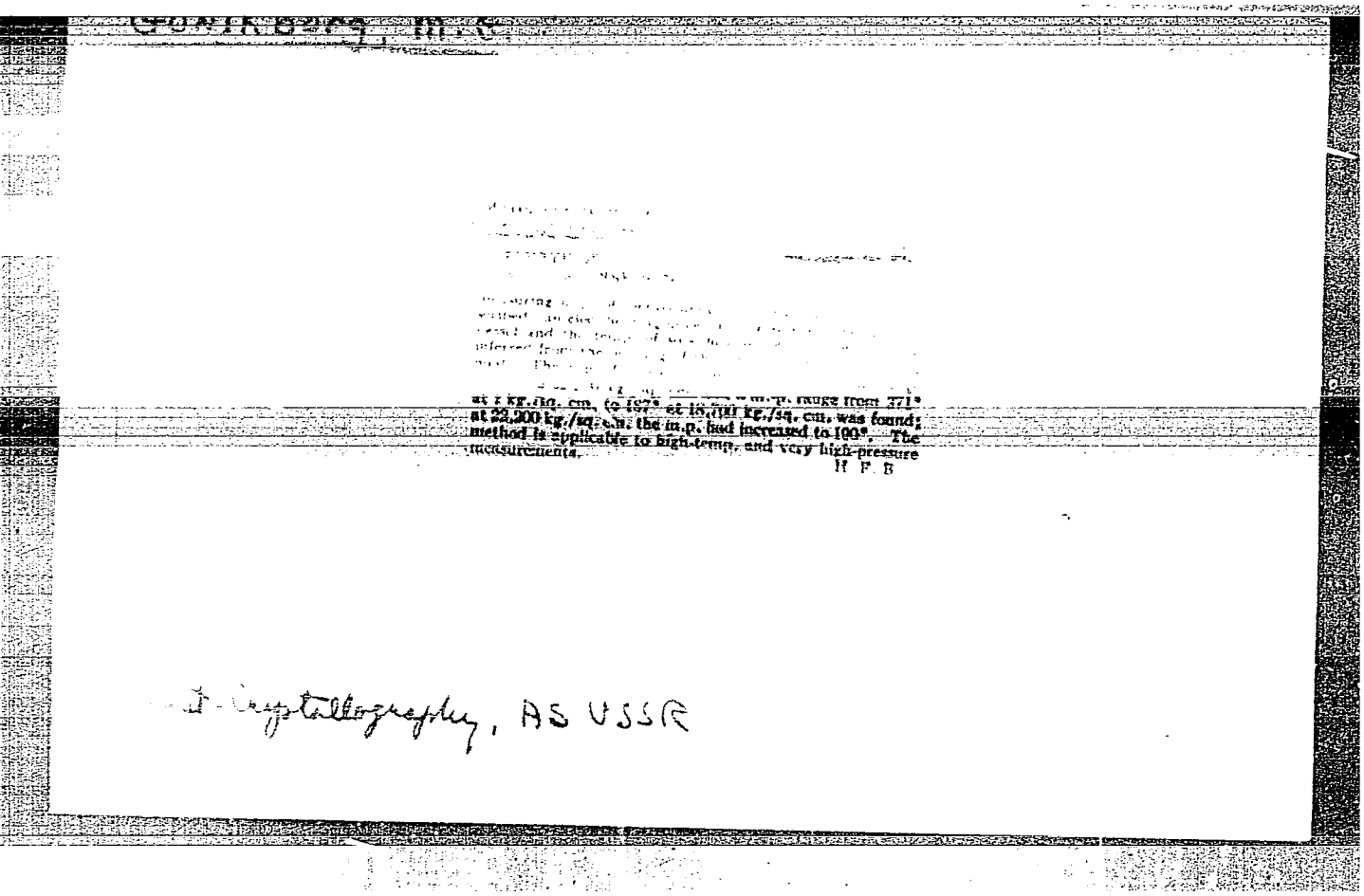
USSR.

✓ The effect of pressure on the rate of ionic isotope-exchange reactions. M. B. Neiman, M. G. Gonikberg, V. B. Miller, Yu. M. Shapovalov, and V. S. Zvezdkin. *Doklady Akad. Nauk S.S.S.R.* 92, 365–8(1953); cf. *C.A.* 47, 3884*k*.—The kinetics of the isotope exchange between alkali halides and *n*-C_3H_7I or *n*-C_3H_7Br in EtOH was studied at 10° and at pressures of 1, 1500, and 2400 atm. The exchange isotopes were I^{131} and Br^{82}. In both cases an increase in the pressure increases the exchange rate. The data obtained can be used to calc. the difference in the vol., $\Delta v^{\ddagger}$, of the activated complex and of the initial materials. These values are given as $-\Delta v_I^{\ddagger} \cong 13$ ml. and $-\Delta v_{Br} \cong 12$ ml.

J. Rovtar Leach

62
4

Inst. Chem. Phys. + Inst. Org. Chem., AS USSR



at 1 kg./sq. cm. to 107° at 10,000 kg./sq. cm. was found; at 22,000 kg./sq. cm. the m.p. had increased to 190°. The method is applicable to high-temp. and very high-pressure measurements.

H F B

Inst. Crystallography, AS USSR

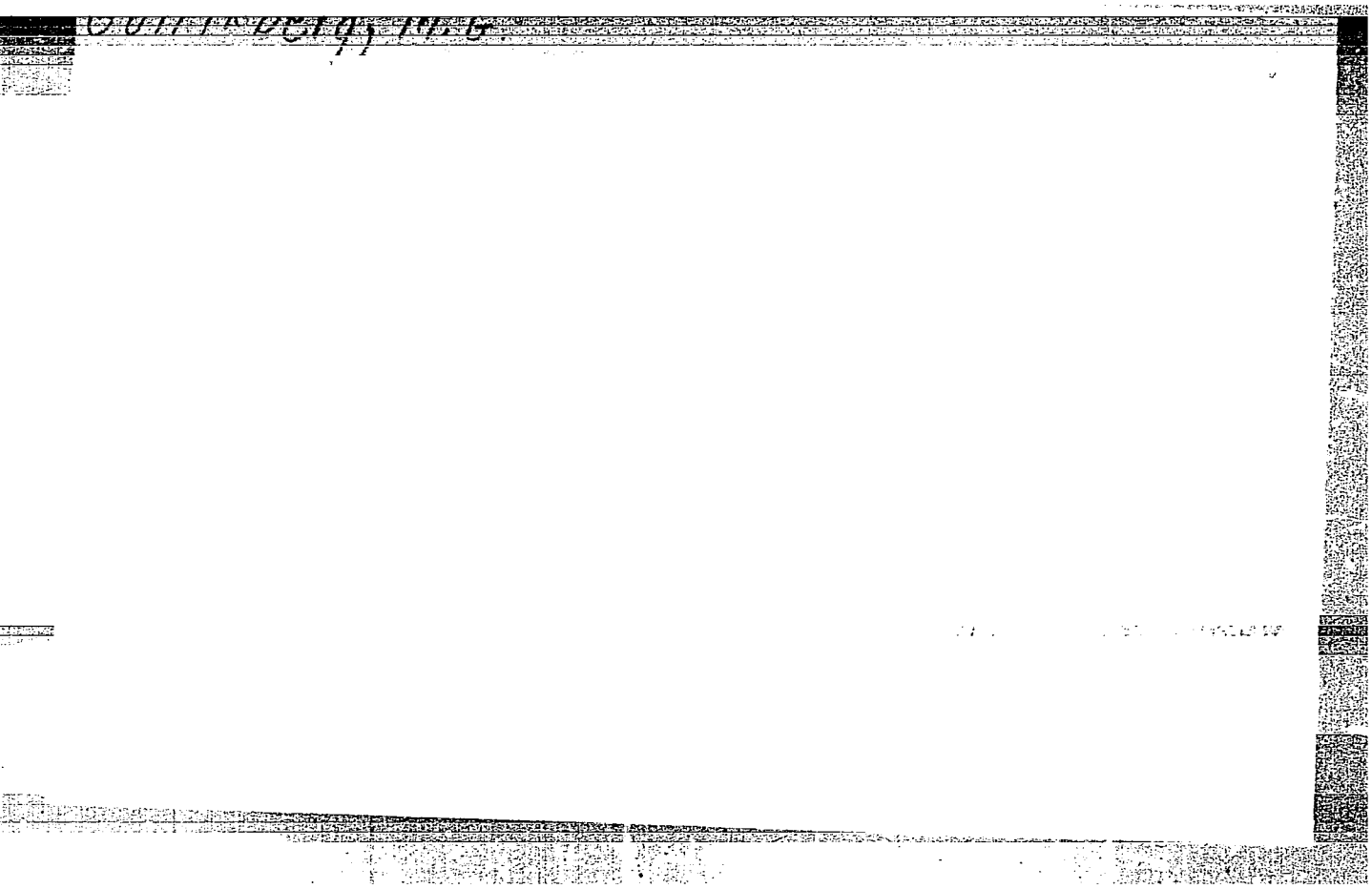
GONIKBERG, M.G.

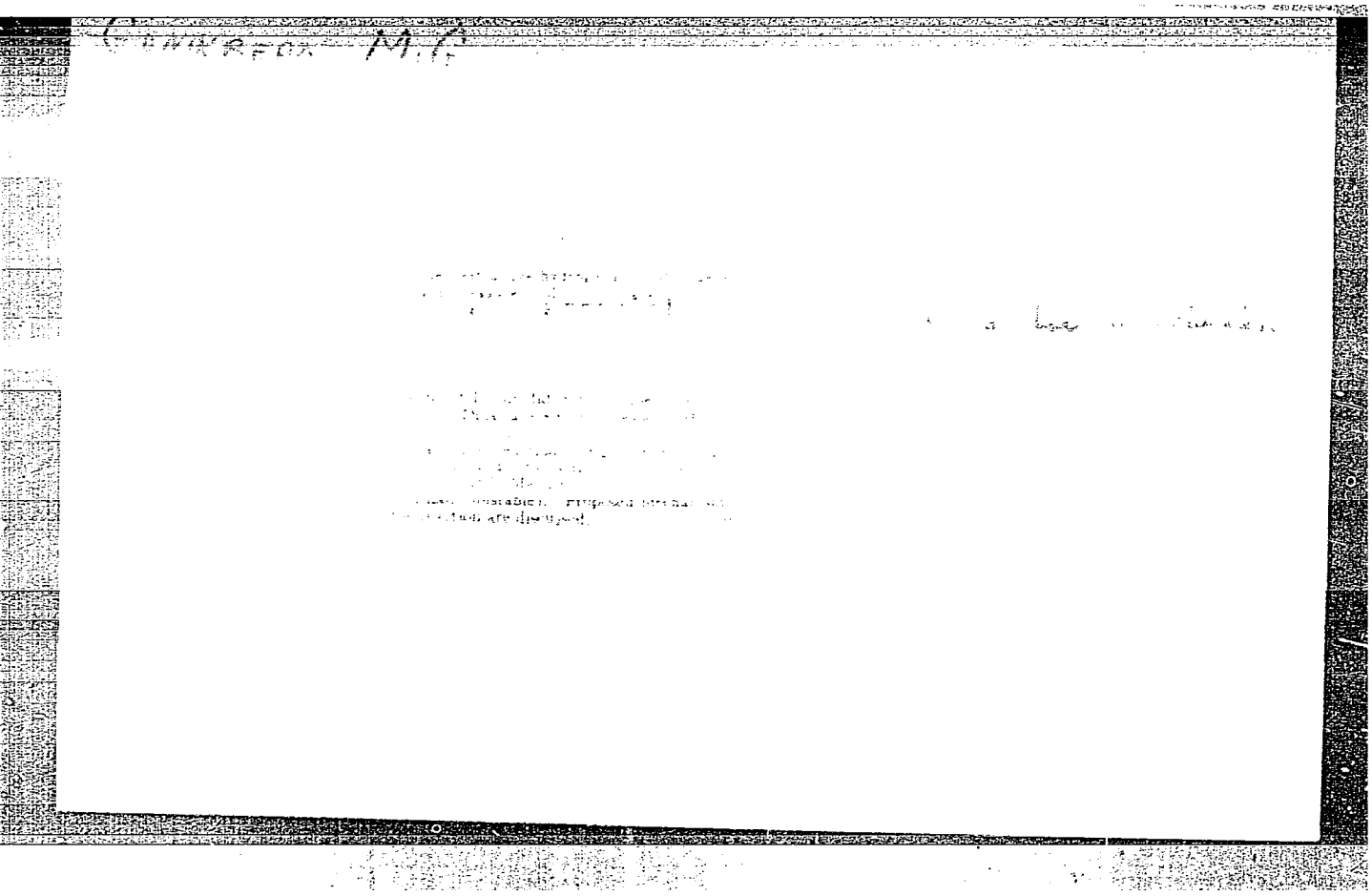
The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Gonikberg, M.G.	"Chemical Equilibrium and Velocity of Reactions at High Pressures"	Institute of Organic Chemistry imeni N. D. Zelinskiy, Academy of Sciences USSR

SO: W-30604, 7 July 1954

The effect of pressure on the mechanism of thermal cracking of paraffin hydrocarbons M. G. Gonikberg and V. V. Vevedskii. *Izvest. Akad.*





GONIKBERG, M. G.

USSR/Chemistry

Card : 1/1

Authors : Gavrilova, A. E., Gonikberg, M. G., Plate, A. F., and Kazanskiy, B. A. Academ.

Title : Thermal decomposition of methylcyclopentane at high hydrogen pressures

Periodical : Dokl. AN SSSR, 96, Ed. 5, 987 - 990, June 1954

Abstract : It was established experimentally that an increased hydrogen pressure results in noticeable reduction in the rate of decomposition of methylcyclopentane and increases the yield of liquid reaction products and unconverted methylcyclopentane. The fraction of cyclopentane in methylcyclopentane conversion products increases in proportion to the increase in hydrogen pressure. An increase in hydrogen pressure decreases the yield of the radical with boiling point of over 60° (to 7 - 10%) after which it remains practically unchanged. Ten references. Tables, graphs.

Institution : Acad. of Sc. USSR, The N. D. Zelinskiy Institute of Organic Chemistry

Submitted : April 14, 1954

GONIKBERG, M. G.

USSR/Chemistry - Polymerization

Card 1/1 : Pub. 22 - 21/44

Authors : Gonikberg, M. G.; Butuzov, V. P.; and Zhulin, V. M.

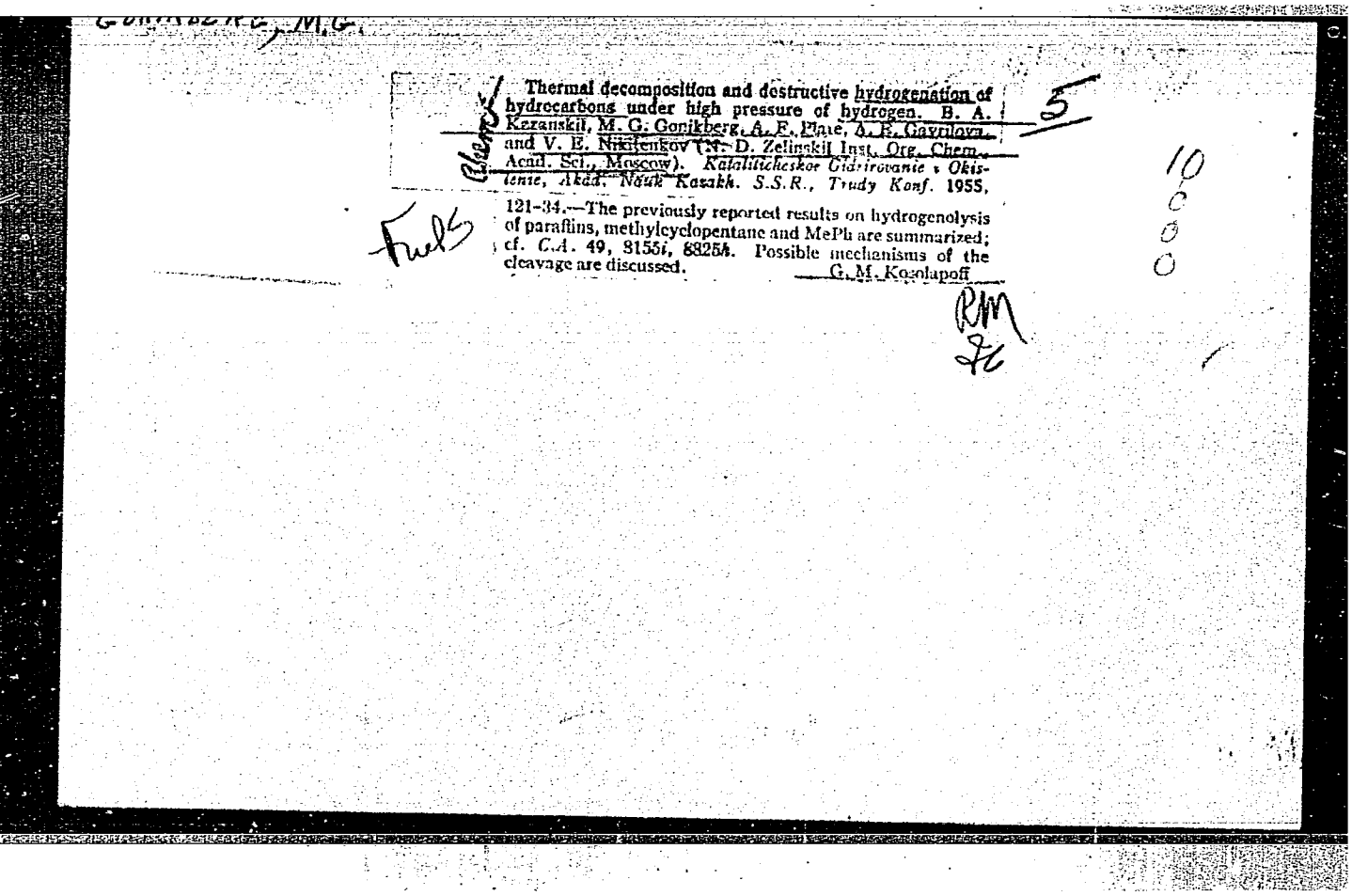
Title : Polymerization of tetramethylethylene at pressures ranging up to 27500 atm

Periodical : Dok. AN SSSR 97/6, 1023-1026, Aug 21, 1954.

Abstract : The results obtained during thermal polymerization of tetramethylethylene at high and ultra-high pressures, are described. The properties of tetramethylethylene polymerization products (unsaturated dimer $C_{12}H_{24}$ and high-molecular unsaturated polymers) were analyzed. Possible ways for dimerization (thermal dimerization) of tetramethylethylene, are discussed. It was established that ultra-high pressures (23000 - 27500 atm) not only accelerate the polymerization of hydrocarbons but even displace the polymerization equilibrium. Nine references: 5-USSR and 4-USA (1925-1953).

Institution : Acad. of Sc. USSR, Institute of Crystallography and the N. D. Zelinskiy Institute of Organ. Chemistry

Presented by : Academician B. A. Kazanskiy, April 15, 1954



Thermal decomposition and destructive hydrogenation of hydrocarbons under high pressure of hydrogen. B. A. Kazanskii, M. G. Gonikberg, A. F. Plate, A. F. Gavrilova, and V. E. Nikiforov (N. D. Zelinskii Inst. Org. Chem., Acad. Sci., Moscow). *Kataliticheskoe Gidrirovanie i Okisienie, Akad. Nauk Kazakh. S.S.R., Trudy Konf.* 1955, 121–34.—The previously reported results on hydrogenolysis of paraffins, methylcyclopentane and MePh are summarized; cf. *C.A.* 49, 8155*i*, 8825*h*. Possible mechanisms of the cleavage are discussed. G. M. Kosolapoff

GONIKBERG, M.G.

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of solid mineral fuels I-12

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12869

Author : Kazanskiy B.A., Gonikberg M.G., Lozovoy A.V., Gavrilova A.Ye., Blonskaya A.I.

Inst : Institute of Mineral Fuels of the Academy of Sciences USSR

Title : Investigation of Hydrogenation of Coal at Hydrogen Pressure Above 1000 Atm.

Orig Pub : Tr. In-ta goryuchikh iskopayemykh AN SSSR, 1955, 6, 3-15

Abstract : Investigation, under laboratory conditions, of the hydrogenation of coal at 420° and pressure of 300-1700 atmospheres, with and without an Fe catalyst. It is shown that under the given conditions, the Fe catalyst has no effect on the hydrogenation process. Increase in pressure from 300-400 to 1200-1500 atmospheres doubles the total yield of gasoline and middle oil fraction,

Card 1/2

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of solid mineral fuels I-12

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12869

increases liquefaction of coal from 78.6 to 95% and the yield of water from 3 to 12.4%, decreases the content of asphaltenes from 41.1 to 3.1%, that of phenols (in the middle oil fraction) from 22.4 to 12.8%; in addition, in the middle oil fraction there is increased the content of lower boiling components (content in 200-240° fraction increases by 1.4-1.6 times), a decrease takes place in the unsaturated hydrocarbons while the content of aromatic hydrocarbons increases, and the content of H - C rises from 95.2 to 97.7%. In the hydrogenation gasoline analogous changes take place. The conclusion is reached that increase in pressure increases considerably the velocity and extent of the process of coal hydrogenation.

Card 2/2

BUTUZOV, V.P.; SHAKHOVSKOY, G.P.; GONIKBERG, M.G.

Intensifiers for conducting studies in superhigh pressures and high temperatures. Trudy Inst.krist.no.11:233-238 '55.
(Hydraulic machinery) (MLRA 9:6)

AID P - 1369

Subject : USSR/Chemistry

Card 1/1 Pub. 119 - 2/6

Author : Gonikberg, M. G., (Moscow)

Title : Use of high pressure in the study of the mechanism of chemical reactions

Periodical : Usp. khim., 23, no. 1, 14-31, 1955

Abstract : Thermal cracking of paraffins at pressures of 300-3100 atm and destructive hydrogenation of aromatics at pressures up to 1,350 atm were studied to investigate the mechanism of reactions in the gaseous phase. Addition of ethyl iodide to pyridine at 3,000 atm., mutarotation of glucose at pressures up to 10,000 atm., and thermal polymerization of styrene at pressures up to 4,000 atm were studied to determine the mechanism of reactions in liquid phase. The study of catalytic reactions showed that catalytic cracking of n-heptane is accelerated by high pressure while thermal cracking is inhibited by it. Five tables, 1 diagram, 50 references (26 Russian: 1932-54).

Institution : None

Submitted : No date

GONIKBERG, M. G.

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 29/49

Authors : Gonikberg, M. G.

Title : The role of the solvent in liquid phase reactions

Periodical : Dok. AN SSSR 102/1, 117-119, May 1, 1955

Abstract : The physical and chemical roles of a solvent in liquid phase reactions are discussed. It is stated that in order to obtain any kind of results through the application of the transient state method without knowledge of the potential surfaces it is necessary first to determine the relation between the rate of reaction in solutions and the hydrostatic pressure existing there. If the solvent affects the constant of the reaction rate only as a medium of specific physical properties (dielectric constant, internal pressure etc), then the variation of the rate constant and pressure will differ in value for different solvents. Nine references: 6 USA, 2 USSR and 1 English (1935-1953).

Institution : Acad. Sc., USSR, Inst. of Organ. Chem. im. N. D. Zelinskiy

Presented by : Academician B. A. Kazanskiy, December 11, 1954

GONIKBERG, M. G.

USSR/Chemistry - Organic chemistry

Card 1/2 Pub. 22 - 26/54

Authors : Gonikberg, M. G., and Nikitenkov, V. Ye.

Title : Effect of hydrogen pressure on the rate and trend of homogeneous destructive hydrogenation of alkyl benzenes

Periodical : Dok. AN SSSR 102/5, 949-952, Jun 11, 1955

Abstract : An investigation was conducted to determine the effect of hydrogen pressure on the process of homogeneous destructive hydrogenation of isopropyl benzene, the thermal decomposition of which leads to the formation of different products (hydrogen, methane, ethane, ethylene, propane, propylene, butanes, benzene, toluene, xylene, ethyl benzene, n-propyl benzenem styrene, alphamethyl styrene, etc.). It was found that an increase in H-pressure

Institution : Acad. of Sc., USSR, The N. D. Zelinskiy Inst. of Organ. Chem.

Presented by : Academician B. A. Kazanskiy, January 29, 1955

Card 2/2 Pub. 22 - 26/54

Periodical : Dok. AN SSSR 102/5, 949-952, Jun 11, 1955

Abstract : during the hydrogenation of isopropyl benzene results in a considerable increase in benzene and propane yields as compared with the yields of other liquid and gaseous reaction products. Eleven references: 5 USSR, 4 USA, 1 English and 1 German (1936-1954). Graphs.

GONIKBERG, M.G.

USSR/ Chemistry - Hydrogenation

Card 1/1 Pub. 40 - 12/25

Authors : Gonikberg, M. G., and Nikitenkov, V. Ye.

Title : Homogeneous destructive hydrogenation of isopropylbenzene at high hydrogen pressures

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 56-66, Jan 1956

Abstract : Homogeneous destructive hydrogenation of isopropyl benzene was investigated at high hydrogen pressures. It was determined that an increase in hydrogen pressure accelerates the total conversion of the isopropyl benzene, it considerably increases the benzene yield, reduces the toluene and ethylbenzene yields and leads to an increase in the propane content in the gaseous reaction products. The effect of hydrogen pressure on the rate and tendency of homogeneous destructive hydrogenation of isopropyl benzene is explained. Ten references: 4 USSR, 1 Germ., 1 Eng. and 4 USA (1936-1953). Tables; graphs.

Institution : Acad. of Sc., USSR, Inst. of Organ. Chem. im. N. D. Zelinskiy

Submitted : January 21, 1955

GOLIKEERG, M.G.; KISELEVA, V.V.; GOL'DFARB, Ya.L.

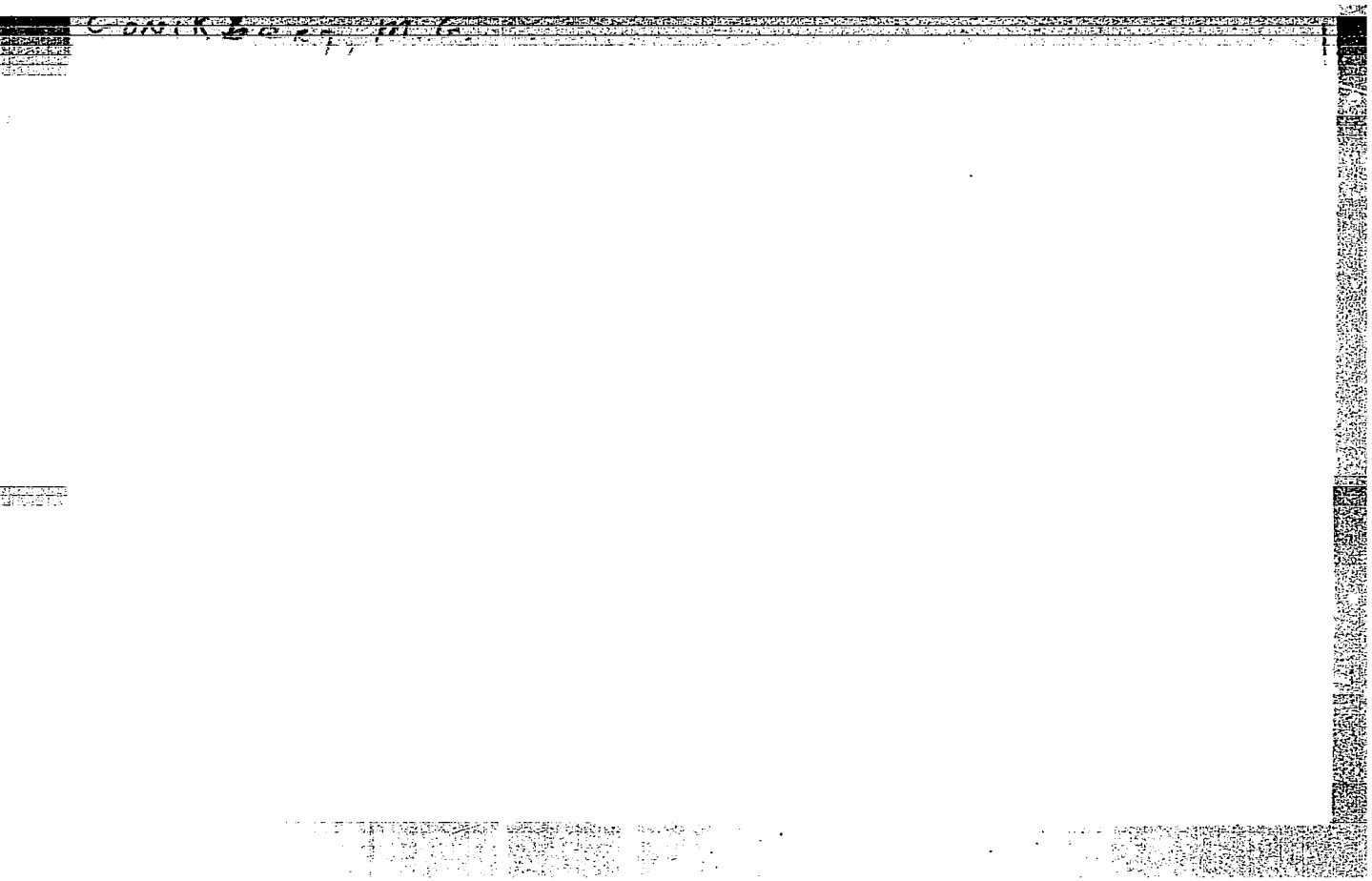
Destructive hydrogenation of α-methylthiophene at high hydrogen pressure. Izv.AN SSSR Otd.khim.nauk no.2:257-259 F '56. (MLRA 9:7)

1.Institut organicheskoy khimii imeni N.D.Zelinskogo Akademii nauk SSSR. (Hydrogenation) (Thiophene)

GONIKBERG, M.G.; ZHULIN, V.M.; BUTUZOV, V.P.

Thermal conversion of tetrachloroethylene at super-high pressures.
Izv.AN SSSR.Otd.khim.nauk no.6:730-732 Je '56. (MLRA 9:9)

1.Institut organicheskoy khimii imeni N.D.Zelinskogo Akademii nauk SSSR i Institut kristallografii Akademii nauk SSSR.
(Ethylene)



APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000516020001-6"

GONIKBERG, M. G.

Category: USSR / Physical Chemistry
Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical analysis. Phase transitions. B-8

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29908

Author : Butuzov V. P., Gonikberg M. G.
Inst : not given
Title : Determination of the Temperature of Fusion of Some Metals at Super High Pressures

Orig Pub: Zh. neorgan. khimii, 1956, 1, No 7, 1543-1547

Abstract: Inside a conical high-pressure vessel, provided with a double support are placed a heating coil and the crucible with the metal under study. The temperature is measured with a thermocouple, one junction of which is in the crucible and the other in the cold portion of the pressure vessel. Temperature of the cold junction is measured with a resistance thermometer. Pressure*/ measured with a manganin manometer. The fusion temperature of bismuth was measured and it was found that it

*/up to 35000 kg/cm^2 is produced in a mixture of iso-pentane and pentane and is...

Card : 1/2 -24-

Category: USSR / Physical Chemistry
Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical analysis. Phase transitions. B-8

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29908

decreases with pressure, from 271° at 1 atmosphere to 186° at 17400 kg/cm^2, which is the triple point of bismuth I - bismuth II - melt. From the triple point, the fusion temperature of the denser modification, bismuth II, increases to 190° at 22000 kg/cm^2. In the case of tin the fusion temperature rises from 232° at 1 atmosphere to 315° at 33000 kg/cm^2, while in the case of lead it rises from 327° at 1 atmosphere to 532° at 34000 kg/cm^2. As the pressure increases the value of $dt_{(fusion)}/dp$ decreases gradually.

Card : 2/2 -25-

M. G. GONIKBERG

Category: USSR / Physical Chemistry
Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical analysis. Phase transitions.

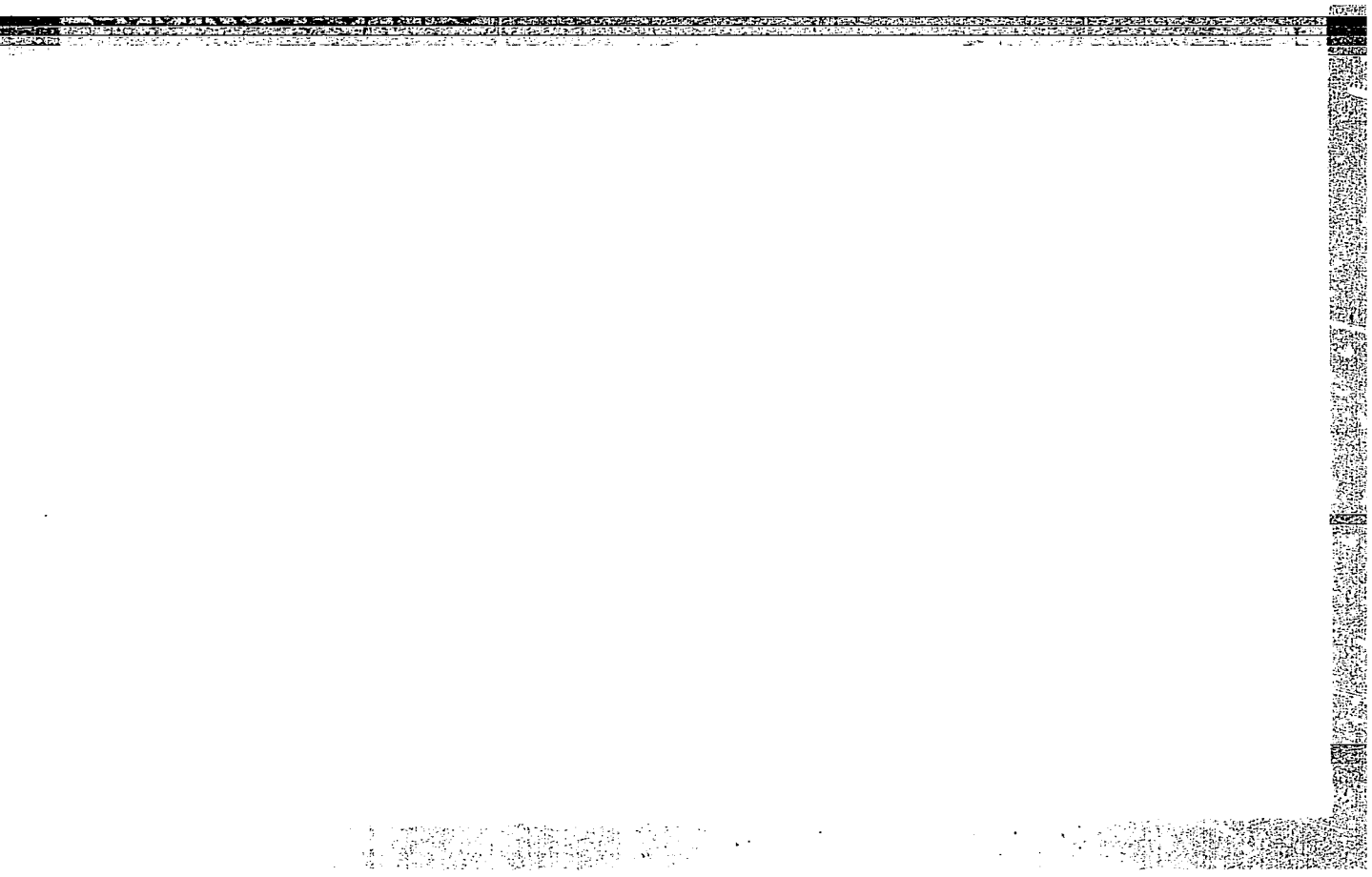
Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29909

B-8

of fusion of phosphorus reaches about 1000°. Investigation of the behavior of red phosphorus revealed that at 4000 kg/cm² and about 600° the formation of a new modification of phosphorus takes place, which is reversible and has a small thermal effect.

Card : 2/2

-27-



APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000516020001-6"

AUTHOR: GONIKBERG, M.G. PA - 2492

TITLE: Ways of Development of Chemical Research in The Case of Overpressure. (Puti razvitiya khimicheskikh issledovaniy pri swyerkhvysokikh davleniyakh, Russian)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1957, Vol 27, Nr 2, pp 50-58 (U.S.S.R.)

Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: Excessively high pressure is nowadays frequently used in various branches of industry, but less frequently for chemical research. It must, however, nevertheless be admitted that the number of laboratories in other countries which are in the habit of using overpressure (thousands and tenthousands of atmospheres) keeps growing every year. In the U.S.S.R. N.D. ZYELINSKIY, member of the Academy, has the merit of having introduced these methods for research work; he was the initiator and the first supervisor of scientific work carried out with overpressure within the field of organic chemistry with and without catalyzers. In England polymerization of ethylene into polythene has been carried out at about 1500 atm. for 13 years. In the U.S.S.R. a work on the polymerization of ethylene into hard polymer was published by A.I. DINTSES in 1940. The author mentions a number of examples from the theory of reactions to applied overpressure and arrives at the following conclusion: One of the most

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Ways of Development of Chemical Research in the Case of Overpressure.

important tendencies of chemical research work carried out under overpressure which must be further developed is the investigation of the thermodynamics and kinetics of chemical transformation at excessively high pressure.

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress

Card 2/2

GONIKBERG M.G.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, B-8
Equilibria, Physical-Chemical Analysis, Phase Transitions.

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 385

Author : M.G. Gonikberg, G.P. Shakhovskoy, V.P. Butuzov.
Inst :
Title : Determination of Heat of Phase Transition of Cerium under Pressure.

Orig Pub : Zh. fiz. khimii, 1957, 31, No 2, 350-353

Abstract : The heat of the phase transition of cerium was determined by the method of thermographs for high pressures based on the comparison of thermal effects of phase transformations of the substance under study with standards at various but close-by pressures and a constant temperature. Mercury was chosen as the standard. Cerium used for the study was 97% pure. The experiments were carried out in a multiplicator of ultrahigh pressure with a working channel of 25 mm. The heat of the phase transition of cerium, equal to

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USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 385

880 cal per g-atom at the temperature from 13 to 18° and the pressure of about 7000 kg per sq.cm, was determined with the exactitude to ± 0.5%. The results of the investigation confirm the thesis concerning the identity of the cerium modification forming under high pressures with its low-temperature modification.

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000516020001-6"

Goniksberg N.G.

AUTHOR GONIKSBERG N.G., ZHULIN V.M., ALEKSANYAN V.I., PA - 2917
STERIN Kh.E.

TITLE The polymerization of 2,3-Dimethylbutene - 2, 2,3-Dimethyl-butene - 1 and 3,3-Dimethylbutene-1 at pressures up to 4.000 atm. (Issledovaniye polimerizatsii 2,3-dimetilbutena-2, 2,3-dimetilbutena-1 i 3,3-dimetilbutena-1 pri davleniyakh do 4.000 atmosfer - Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 1, pp 123 - 126 (U.S.S.R.)

Received: 6/1957 Reviewed: 7/1957

ABSTRACT In a previous paper it was shown that high pressure accelerates the polymerization of 2,3 dimethyl-butan-2 (henceforth referced as DMB) considerably. In the present paper the authors intended to study the cinetics of 2,3 DMB-2 and of related compounds at high pressure and to investigate the properties of the polymers. This reaction takes place gradually under a pressure of 3660-3680 atm and at a temperature of 290-292°C and passes through a dimer state (which has its maximum yield after about 16 hrs). The dimer fraction is able to undergo further polymerization. The degree of polymerization after 32 hrs is still low (9,1-17,7%). Under the same conditions 2,3-DMB-1 and 3,3-DMB-1 are polymerzated

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The polymerization of 2,3-Dimethylbutene-2, 2,3-Dimethylbutene-1 and 3,3-Dimethylbutene-1 at pressures up to 4.000 atm.

much faster and form products of a high molecular weight. The polymers of the three hexanes under discussion, which are similar with respect to their molecular weight, show considerable differences among themselves and with regard to the products of ion polymerization. Since the present of 2,3 DMB-1 was established in the monomer fraction of the polymerization product 2, 3 DMB-2, the authors carried out polymerization experiments with a mixture of both substances. If they were mixed with a ratio of 1 : 1, 2,3-DMB-2 reacted much faster than 2,3-DMB-1 in comparison to separate polymerization of either hexane. In the case of small admixtures of the latter hexane to the former these effects are not observed. This is indicative of a co-polymerization, a fact, which is confirmed by the values of the diffraction coefficient and by the specific weight. No formation takes place, therefore, of a simple mixture of the polymers of both hexanes. Consequently the polymerization of 2,3-DMB-2 does not pass through a preceding stage of isomerization of the 2,3-DMB-1. From the investigation of the dimer fraction, which consists at least of

The polymerization of 2,3-Dimethylbutene-2, 2,3-Dimethylbutene-1 and 3,3-Dimethylbutene-1 at pressures up to 4.000 atm.

two olefines, it appears that, in the case of the polymerization of the three hexames under consideration, as structural polymerization takes place. Without this process the formation of Cis-dalkylethylenes could not be expected. They predominate, however, in the dimer fraction. Moreover, the formation of monoalkylethylenes would not be imaginable without the assumption that in the case of the polymerization of 2,3 DMB-2 it is not the molecules or the radicals of the monomeres that are subjekt to a structural isomerozation, but dimer molecules or the radicals $C_{12}H_{23}$. Results show that the reaction of thermal polymerization accelerated by pressure is slowest in the case of 4-substituted ethylenes. This is apparently due to the important spatial difficulties under consideration.
(With 3 tables and 5 citations from other publications.)

CARD 3/3

ASSOCIATION: Institute for Organic Chemistry "N.D. Zelinskiy" and the Commission for Spectroskopy of the Academy of Sciences of the USSR.
PRESENTED BY: B.A. KAZANSKIY.
SUBMITTED: 21.9. 1956.
AVAILABLE: Library of Congress.

5(0) PHASE I BOOK EXPLOITATION SOV/1486

Gonikberg, Mark Gertsevich

Vysokiye i sverkhvysokiye davleniya v khimii (High- and Superhigh Pressures in Chemistry) Moscow, Izd-vo AN SSSR, 1958. 53 p. (Series: Akademiya nauk SSSR. Nauchno-popularnaya seriya) 25,000 copies printed.

Resp. Ed.: B.A. Kazanskiy, Academician; Ed. of Publishing House: O.M. Yenisherlova; Tech. Ed.: O.M. Gus'kova.

PURPOSE: This book is for industrial chemists, scientists, engineers, technologists and other persons interested in chemical processes involving the use of pressures ranging from ~20 to ~25 000 atmospheres.

COVERAGE: This borchure acquaints the reader with the theoretical and practical principles of using high and superhigh pressures in chemistry. It reviews the present state of problems

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related to this subject and gives prospects for further development. Considerable attention is given to chemical reactions at superhigh pressures.

TABLE OF CONTENTS:

SOV/62-58-8-11/22

AUTHORS: Gavrilova, A. Ye., Gonikberg, M. G., Aleksanyan, V. T., Sterin, Kh. Ye.

TITLE: The Investigation of the Homogeneous Destructive Tetralin Hydration at High Hydrogen Pressure (Issledovaniye gomogennogo destruktivnogo gidrirovaniya tetralina pri vysokikh davleniyakh vodoroda)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958, Nr 8, pp. 981-989 (USSR)

ABSTRACT: The present paper is the continuation of a number of preliminary papers on the homogeneous destructive hydration of aromatic hydrocarbons at high hydrogen pressure. Among the various papers by other authors Darwent (Darvent, Ref 5) must be mentioned especially; he assumed that the compound of atomic alkyl benzene with the simultaneous formation of the unstable free radical is based on the last of several reactions. This radical then decomposes at the binding $C_{arom} - C_{aliph}$. After further explanations of this process the authors mention that the break of the C - C bond in the binding of the hydrogen atom with the

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The Investigation of the Homogeneous Destructive Tetralin Hydration at High Hydrogen Pressure

carbon atom of the ring is to be assumed as probable. With respect to the break of the C - C bond and the processes connected with it it was of special interest to the authors to investigate the homogeneous destructive tetralin hydration. This hydration took place at 440-462°C and at up to 1200 atmospheres of absolute pressure. Based on the investigation of the reaction products by means of rectification methods and the taking of combination-dispersion spectra of light (as well as by means of kinetic data) the authors suggested a general scheme of the tetralin reactions on the conditions mentioned. The data obtained agree with the assumptions mentioned in the present paper with respect to the radical and chain mechanism of the homogeneous destructive hydration of aromatic hydrocarbons. There are 1 figure, 4 tables, and 17 references, 8 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo. Komissiya po spektroskopii pri OFMN Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy, AS USSR; Committee of Spectroscopy OFMN, AS USSR)

AUTHORS: Gonikberg, M. G., Zhulin, V. M. SOV/62-58-10-16/25

TITLE: Thermal Polymerization of Dimethyl Butene Under High Pressure (Termicheskaya polimerizatsiya dimetilbutenov pri vysokikh davleniyakh)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1958, Nr 10, pp 1254 - 1263 (USSR)

ABSTRACT: In a previous paper (Ref 1) on the polymerization of 2,3-dimethyl butene-2 it was shown that the reaction velocity under increased pressure can be considerably increased; in the same way, the increase in pressure causes an increase of the average polymerization degree of this olefin. In the present paper the authors investigated in detail the thermal polymerization of 2,3-dimethyl butene-2 under a pressure of about 4000 kg/cm^2 at 290°. Also the polymerization of two other hexenes were investigated: 2,3-dimethyl butene-1 and 3,3-dimethyl butene-1, under the same conditions. Based on the investigation of the kinetics of the polymerization of 2,3-dimethyl butene-2 (under pressure) the steplike

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character of this reaction was discovered. Furthermore it was found that the thermal polymerization of 2,3-dimethyl butene-1 and 3,3-dimethyl butene-1 under pressure takes place much more rapid than the polymerization of 2,3-dimethyl butene-2 under similar conditions. It leads to the formation of polymers with a higher average molecular weight. Based on the comparisons of the properties and the structure of dimer fractions of the polymerization products of 2,3-dimethyl butene-2 and 2,3-dimethyl butene-1 it is assumed that the polymerization of 2,3-dimethyl butene-2 takes place mainly not by way of the stage of the preliminary isomerization in 2,3-dimethyl butene-1. From the data obtained on the structure of dimer fractions it may be concluded that under the conditions investigated besides the displacement of the double bond also a structural isomerization (apparently of the dimer molecules or radicals $C_{12}H_{23}$) takes place. The thermal polymerization of 2,3-dimethyl butene-2 under high pressure leads to the formation of olefins. These

differ from the products of the ion polymerization of 2,3-dimethyl butene-2 by virtue of their structure and their properties (first of all they have higher refractive coefficients). There are 11 tables and 8 references, 6 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N.D. Zelinskiy AS USSR)

SUBMITTED: March 5, 1957

5(3) SOV/30-58-12-38/46

AUTHORS: Gonikberg, M. G., Doctor of Chemical Sciences, Bergel'son, L. D., Candidate of Chemical Sciences

TITLE: Conformal Representations in Organic Chemistry (Konformatsionnyye predstavleniya v organicheskoy khimii) Conference in Moscow (Soveshchaniye v Moskve)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 12, pp 94 - 96 (USSR)

ABSTRACT: The conference took place from September 30 to October 2 dealing with the problems: "The Theory of Chemical Structure, Kinetics and Capacity of Reaction", as well as "The Synthesis and Study of Biologically Important Natural Compounds". The conference was convoked by the Uchenyye sovety pri Otdelenii khimicheskikh nauk (the Scientific Councils at the Department of Chemical Sciences) as well as by the Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N.D.Zelinskiy AS USSR). About

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Conformal Representations in Organic Chemistry. Conference in Moscow

SOV/30-58-12-38/46

300 persons took part in the work of the conference. In his opening speech B. A.Kazanskiy said that it was necessary for the exact description of an organic molecule to know its structure following Butlerov's theory, as well as to know its formation and conformity. In addition the following lectures were given: V.F.Kucherov, V.M.Andreyev reported on new examples of the successful application of the principles of conformal analysis for proof of the formation of stereoisomers. V.F.Kucherov, N. Ya.Grigor'yeva, G.M. Segal', V.M.Andreyev worked out stereospecific reactions of the "epoxylation", of the hydroxylation, of the lactonization , of the cyclohexene derivatives and octaline derivatives, which allow a new approach to the synthesis of the stereoids. E.A.Mistryukov, N.I.Shvetsov, D.V.Sokolov, G.S.Litvinenko, K.I. Khludnev on the synthesis of anesthetics. A.A.Akhrem , A.V.Kamernitskiy, G.V.Aleksandrova, I.N. Nazarov (deceased) gave some information on the conformal analysis of organic reactions.

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Conformal Representations in Organic Chemistry. Conference in Moscow

SOV/30-58-12-38/46

L.D.Bergel'son, L.P.Badenkova on new examples of the influence of the conformities upon the reactivity of stereoisomers.
Yu.T.Struchkov on the influence of the interaction of the non-valence-bound atoms upon molecular geometry.
A.I.Kitaygorodskiy on the importance of the theoretical determination tensions which are produced by the interaction of the non-valence-bound atoms, for chemical kinetics.
A.L.Liberman, B.A.Kazanskiy gave new experimental data on physical properties of dialkyl cyclanes.
M.V.Vol'kenshteyn, O.B.Ptitsyn, T.M.Birshteyn, Yu.A. Sharonov reported on the relation between the conformities of polymeric molecules and measurements of polymer chains and other physical properties.
Yu.A.Pentin gave new data concerning the connection between conformities of molecules and the phenomenon of crystallization.
L.M.Mayants spoke about the problem of the application

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of the theory of characteristic frequencies for the purpose of investigating conformities.
M.M.Sushchinskiy compared the experimental values with the results obtained by calculating the oscillation frequencies of various conformities.
V.M.Tatevskiy, Yu.A.Pentin, Ye.G.Treshchova, Kh. Keslèr, Yu.G.Populov spoke about the results obtained by the investigation of the infrared spectra of a number of alkanes and alkenes.
V.M.Tatevskiy and his coauthors recommended a calculation scheme for the determination of the difference in the energy of various conformities.
Yu.A.Pentin gave information concerning the spectral determination of the energy-differences of various conformities of alkyl halides.
A.I.Kitaygorodskiy recommended that energy stability be considered to be the sum of energies of the deformation of the valence angle from its "normal" value and of the pressure energy of the not valence-dependent atoms. He further gave a definition of the

conception of "conformity".
A.L.Liberman, V.F.Kucherov, L.D.Bergel'son, A.V. Kamernitskiy, M.V.Vol'kenshteyn, V.M.Tatevskiy took part in the discussion.
B.A.Kazanskiy closed the conference and stressed its positive importance.

AUTHOR: Gonikberg, M. G. SOV/76-32-9-42/46

TITLE: Concerning the Effect of Pressure on the Rate of Reaction in Liquid Solutions (K voprosu o vliyanii davleniya na skorost' reaktsiy v zhidkikh rastvorakh)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 9, pp 2216-2218 (USSR)

ABSTRACT: The dependence of the velocity constants upon the pressure of a chemical reaction is expressed by the following equation: $(\frac{\partial \ln k}{\partial P})_T = -\frac{\Delta v^{\neq}}{RT}$. In this expression $\Delta v^{\neq}$ is the volume change in the formation of the active complex. $\Delta v^{\neq}$ is given by two components (Ref 1):

1) The volume change for the reactive particle which forms by uniting with the activated complex $(\Delta_1 v^{\neq})$;

2) The change in the volume of the solvent in the formation of the activated complex through various solvation reactions with the initial and end products $(\Delta_2 v^{\neq})$. In radical and molecular reactions a valid approximation is $\Delta_1 v^{\neq} \approx \Delta v^{\neq}$. In ionic reactions, on the other hand, $\Delta_2 v^{\neq}$ is preponderant. In opposition

Card 1/2

Concerning the Effect of Pressure on the Rate of Reaction in Liquid Solutions

to the contentions of various scientists (Refs 7,9,11) it is held that $\Delta_1 v^{\neq}$ is the decisive factor in the Menshutkin reactions. As evidence the author reports the results of work carried out in cooperation with V. M. Zhulin (Ref 15) dealing with the reaction of pyridine with ethylene iodide. There are 17 references, 6 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut organicheskoy khimii im. N. D. Zelinskogo (AS USSR, Institute of Organic Chemistry imeni N. D. Zelinskiy)

SUBMITTED: March 12, 1958

GONIKBERG, M.G.

AUTHORS: Gonikberg, M. G., and El'yanov, B. S. 20-1-26/58

TITLE: Dimerization of Butyricaldehyde at Superhigh Pressures (Dimerizatsiya maslyanogo al'degida pri sverkhvysokikh devleniyakh).

PERIODICAL: Doklady AN SSSR, 1958, Vol. 118, Nr 1, pp. 92-95 (USSR).

ABSTRACT: The authors give a survey of the papers published on the polymerization of butyricaldehyde (references 1-3). The polymers have a consistency of form a viscous liquid to a waxlike substance and depolymerize at atmospheric pressure to the initial aldehyde. As the polymers are insoluble in organic solvents, it was not possible to determine their molecular weights. The addition of various reagents for determining the nature of the end groups of the polymeric molecules also remained resultless. Thus the structure and the causes of the instability of the polymers of the above-mentioned aldehyde are hitherto unknown. The authors attempted first to produce low polymers at superhigh pressure which might perhaps be accessible to an investigation. A method is described in the experimental part (see also reference 7). Table 1 gives results of the determination of the binary mixtures of butyricaldehyde and butyric acid butyl ether (whose empirical molecular formula corresponds to the dimer of the former). The examination of table 1 leads to the conclusion

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that this method makes possible an approximate determination of the composition of a mixture whose components differ by molecular weights and otherwise. The tests performed showed that a liquid polymer can be produced from butyricaldehyde at 5500-6000 at. excess pressure. A waxlike product often developed on contact of the aldehyde with the air. At 3000 at. excess pressure no polymerization took place. The liquid polymers were soluble in benzene. This made it possible to determine their molecular weight (table 2). From this is to be seen that polymers whose molecular weights are close to that of the dimer (144) develop under the conditions selected. Figure 3 shows the dependence of the index of refraction of the polymeride on the dimer content. The polymes produced gradually depolymerize on the air at atmospheric pressure. In a diluted solution of the polymer in benzene near the solidification point of the latter the rate of depolymerization is small. Neither does a depolymerization of any significance take place at the time of the dissolution of the polymer in benzene. Consequently the molecular weights determined here are approximate to the true ones. The structure and the causes of the instability of the dimer produced here for the first time are the subject of further investigation.

Dimerization of Butyricaldehyde at Superhigh Pressures. 20-1-26/58

There are 3 figures, 2 tables, and 8 references, 1 of which is Slavic.

ASSOCIATION: Institute for Organic Chemistry imeni N. D. Zelinskiy AN USSR (Institut organicheskoy khimii imeni N. D. Zelinskogo Akademii nauk SSSR).

PRESENTED: July 13, 1957, by B. A. Kazanskiy, Academician.

SUBMITTED: July 12, 1957.

AVAILABLE: Library of Congress.

Card 3/3

SOV/ 2o-12o-6-26/59

AUTHORS: Gonikberg, M. G., Li, Kuang-nien

TITLE: Investigation of Thermal Transformations of Phenol at High Hydrogen Pressure (Issledovaniye termicheskikh prevrashcheniy fenola pri vysokikh davleniyakh vodoroda)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 12o, Nr 6, pp.1259-1262 (USSR)

ABSTRACT: A high thermal stability of phenol at 500° was reported already earlier (Refs 1 - 3). Its thermal transformations take place not earlier than at 650 - 700°. A short review of technical publications on the problem mentioned in the title (Refs 4 - 6) is given. The authors studied this problem in a reactor made of stainless steel. They found (in accordance with Ref 6) that at 460° and at an initial pressure of hydrogen of 100 atmospheres excess pressure very small amounts of benzene are formed from phenol. On Table 1 the results of experiments carried out at 490°, during 3 hours, and with different initial pressures of hydrogen are given. It may be seen from it that the increase of this pressure from 100 to 300 atmospheres excess pressure leads to an increase in the yield of benzene fractionation nearly by the threefold. The

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experiments on the homogeneity of the mentioned process have shown that the area of the metal surface and its ratio with the volume of the reactor do not influence the reaction velocity. Hence, the mentioned process is homogeneous. On Table 2 the data concerning the composition of the gaseous reaction products are given. It can be seen from it that the thermal decomposition of phenol is considerably accelerated with the increase of hydrogen pressure. The first stage of this decomposition is apparently the rupture of the O - H- -binding under the formation of a phenoxy radical (Ref 8). The diphenyl ether which had been expected could not be found. Only on the basis of a special experiment with this ether the authors succeeded in isolating diphenylene oxide (14,3 % of the weight) at a hydrogen pressure of 200 atmospheres excess pressure. The experiments carried out showed that the transformation of phenol mentioned in the title lead to the formation of benzene as a main product. p-cresol, diphenyl, and diphenyl oxide as well as apparently tetrahydrophenylene oxide were found in the high-boiling reaction products. A scheme of the here assumed radical-chain-mechanism of the reactions(1) - (7) investigated is given. The reactions (2)

Investigation of Thermal Transformations of Phenol at High Hydrogen Pressure SOV/ 20-120-6-26/59

- (5) form processes in the chain propagation while the reactions (6) and (7) represent a process of chain rupture. There are 2 tables and 9 references, 3 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

PRESENTED: March 14, 1958, by B. A. Kazanskiy, Member, Academy of Sciences, USSR

SUBMITTED: March 13, 1958

1. Phenols--Decomposition 2. Phenols--Temperature factors
3. Pressure--Chemical effects 4. Hydrogen--Chemical reactions

Card 3/3

AUTHORS: Gonikberg, M. G., Kitaygorodskiy, A. I. SOV/2o-122-2-18/42

TITLE: On the Influence of Pressure Upon the Rate of Sterically Inhibited Reactions (K voprosu o vliyanii davleniya na skorost' prostranstvenno zatrudnennykh reaktsiy)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 2, pp 231 - 234 (USSR)

ABSTRACT: The scarcely available experimental evidences suggest a considerable acceleration of the sterically inhibited reactions under increased pressure. Thus, tetramethyl ethylene was totally polymerized within 3 hours at 23,000 atmospheric excess pressure and at 300° whereas at 200° atmospheric excess pressure this was possible for 20% only. (Ref 1). The pressure also accelerates the thermal transformations of tetrachloro-ethylene at 300° and leads to the formation of hexachloro-butadiene and hexachloro-ethane (Ref 2). In both of these cases, the acceleration of reaction is but little related with the increasing concentration of the initial material. It is, however, caused by an increased velocity constant of the reaction by the

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increase of pressure. In the present paper only the values $\Delta v^{\neq}_{mol}$ are discussed (change in volume of the reactive molecules at the formation of the activated complex). Obviously, this value is an essential component of the quantity $\Delta v^{\neq}$. The authors confine their discussion to the reactions of Menshutkin which, by the way, were the object of various kinetic investigations at high pressure. They proceed from the conception of the structure of an activated complex as it is seen from the scheme (Fig 1, Ref 5). Then, reactions with pyridine, trimethylamine, and dimethyl-aniline are discussed. The values computed according to the scheme ($-\Delta v^{\neq}_{mol}$) reach some dozens cm^3 pro mol for some Menshutkin reactions. With increasing pressure, this must lead to a considerable acceleration of these reactions according to the equation

$\left(\frac{d \ln K}{dp}\right)_T = -\frac{\Delta v^{\neq}}{RT}$ (1). By the results of table 1 it becomes evident that the acceleration really occurs. The qualitative determination of a sterically inhibited formation process of an activated complex makes it possible to explain the various accelerations of the Menshutkin reactions by pressure if these reactions differ by the structure of the participating amines and haloid alkyls. In particular, the increasing acceleration of these reactions with the transition of CH_3J to C_2H_5J and to iso-C_3H_7J as well as of C_5H_5N to $(CH_3)_3N$ and to $C_6H_5N(CH_3)_2$ becomes clear, further the same pressure effect in the reactions of trimethylamine and triethylamine. Of course, for a perfect analysis of the influence of pressure upon the velocity of the reaction, all $\Delta v^{\neq}$ are to be considered. There are 3 figures, 1 table, and 11 references, 3 of which are Soviet.

On the Influence of Pressure Upon the Rate of Sterically Inhibited Reactions

SOV/20-122-2-18/42

ASSOCIATION: Institut organicheskoy khimii im.N.D.Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N.D.Zelinskiy, AS USSR)

Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elementary Organic Compounds, AS USSR)

PRESENTED: April 29, 1958, by B.A.Kazanskiy, Member, Academy of Sciences, USSR

SUBMITTED: April 24, 1958

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5(4)

AUTHORS: Mayranovskiy, S. G., Gonikberg, M. G., Opekunov, A. A.

SOV/20-123-2-29/50

TITLE: Polarography at High Pressures (Polyarografirovaniye pri vysokikh davleniyakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 2, pp 312-315 (USSR)

ABSTRACT: The present paper describes the apparatus and methods of polarography (with a mercury electrode) at pressures up to 3,000 kg/cm^2; it further gives the first results obtained concerning the influence exercised by pressure upon the polarographic behavior of some simple ions. A schematical drawing shows the schematical structure of the measuring device used. It consists essentially of a steel vessel containing oil under pressure. The capillary of the drop-electrode is provided with a small shovel effecting (enforced) stripping-off of the drops, which warrants the maintenance of a constant period of dropping in the case of a variation of the electrode potential. In the course of the experiments carried out by the authors this period did not vary even if pressure was increased from atmospheric pressure to 3,000 kg/cm^2. A saturated calomel

electrode was used for purposes of comparison. The electrode has a siphon filled with mercury, which served as a stopper. The entire vessel was located in a water bath in which a constant temperature ($25 \pm 0.1^{\circ}$) was maintained by means of an ultrathermostat. The experiments are described in short. They were carried out with 2 solutions: a) 1.00 mM TlCl and 0.75 mM HCl in 0.1 n KCl; b) 0.65 mM $CdSO_4$, 0.90 mM $ZnSO_4$, and 0.40 mM HCl in 0.1 n KCl. The results obtained are shown by a table and 2 diagrams. Investigation of experimental data permits drawing the following conclusions: 1) The potential of the half-wave Tl^+ and the limiting current practically do not vary if pressure is increased from 1 to 3,000 kg/cm^2. 2) The potentials of the half periods of Cd^{2+} and Zn^{2+} shift if pressure is increased towards higher negative values. The limiting current increases somewhat if pressure is increased from 1 to 1,000 kg/cm^2. 3) The potential of the half-wave of the irreversible discharge of H^+ shifts if pressure is increased to 3,000 kg/cm^2, towards lower negative values; the limiting current increases throughout the entire pressure interval investigated. 4) The inclination of the waves of all ions investigated in practice does not depend on pressure.

Next, an expression is written down for the variation of the potential of a half-wave for a reversible system. In the case of the dissolution of TlCl in 0.05 n and 0.2 n solutions of KCl, the solution expands a little, but at 0.1 n and 0.5 n it contracts somewhat. The decrease of overvoltage of hydrogen under pressure, which was noticed by the authors, is of considerable interest and deserves to be further investigated thoroughly. In conclusion, the influence exercised by pressure on the boundary value of the diffusion current is investigated. There are 3 figures, 1 table, and 7 references, 3 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

GONIKBERG M.G.

ГОМОГЕННОЕ ДЕМЕТИЛИРОВАНИЕ КРЕЗОЛОВ

Ли Гуан-нянь, М. Г. Гоникберг
(Институт [illegible])

VIII Mendeleyev Congress for General and Applied Chemistry in Section of Chemistry and Chemical Technology of Fuels, publ. by Acad. Sci. USSR, Moscow 1959

Abstracts of reports scheduled to be presented at above mentioned congress, Moscow, 15 March 1959.

M. G. Gonikberg

AUTHOR: 5(0) None Given SOV/62-59-3-36/37

TITLE: General Meetings of the Department of Chemical Sciences of the Academy of Sciences, USSR on October 23 and November 27-28, 1958 (Obshchiye sobraniya Otdeleniya khimicheskikh nauk Akademii nauk SSSR 23 oktyabrya i 27-28 noyabrya 1958 g.)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 3, pp 564-568 (USSR)

ABSTRACT: This is a report on the General Meetings of the Department of Chemical Sciences, AS USSR. On October 23, 1958 the General Meeting of the Department of Chemical Sciences of the AS USSR took place under the chairmanship of Academician N. N. Semenov. A. V. Novoselova delivered a lecture on the "Investigations in the Field of Tellurium Chemistry". She emphasized the fact that the interest in tellurium has considerably increased in the course of the last years because of the valuable semiconductor properties of tellurium and numerous tellurides. In her lecture she reported on the investigations of the behavior of admixtures and on the investigations of the production of pure tellurium. And numerous questions. V. I. Porey-Koshits, Candidate of Physical and Mathematical Sciences spoke on the "Stereochemistry of Complex Compounds of Bivalent Nickel". On the basis of direct X-ray structural analyses carried out at the Institut obshchey i neorganicheskoy khimii AN USSR (Institute of General and Inorganic Chemistry, AS USSR) and the MU it was found that all ammonia thiocyanate compounds of nickel which are separated from the solution at different concentrations represent, according to their structural character, complex six-coordination compounds. The analysis of the crystallochemical rules in the series of ammonia thiocyanate compounds. G. B. Bokiy and S. Z. Roginskiy, Corresponding Members, AS USSR, took part in the discussion. [illegible] Doctor of Chemical Sciences spoke on the [illegible] High Pressure in the Investigation of the Transition State and the Mechanism of Reaction". By means of experimental data the lecturer proved that the application of high pressure opens new prospects in this field. S. Z. Roginskiy, Corresponding Member, AS USSR, took part in the discussion. [illegible] and A. I. Kitaygorodskiy, Doctors of Chemical Sciences took part in the discussion. On the occasion of the general meeting held under the chairmanship of Academician A. P. Vinogradov from November 27 to 28, 1958 N. I. Matiis, Corresponding Member, AS USSR and G. A. Petropavlovskiy, Candidate of Technical Sciences spoke on the "Properties of Low-substituted Cellulose Nitrates and Their Solutions". The following scientists took part in the discussion: S. N. Danilov, Corresponding Member, O. P. Golova, Doctor of Chemical Sciences, et al. "Specific Sorption of Ions of Organic Substances". The synthesis of weakly swelling ion-exchange resins, which cannot absorb certain ions of organic substances also the establishment of a new effective method of producing chemically pure streptomycin and penicillin. The lecturer was asked many questions. M. V. Volkenshteyn, Doctor of Physical and Mathematical Sciences dealt with the "Problems of Statistical Physics of the Polymer Chains". The lecturer and his collaborators have developed a general statistical method of computing the properties of macromolecules which is based on the application of the rotational isomer model. The following scientists took part in the discussions: V. I. Ivanov, Doctor of Chemical Sciences B. V. Deryagin and V. G. Levich, Corresponding Members, AS USSR. V. N. Tsvetkov, Doctor of Physical and Mathematical Sciences spoke on the "Intermolecular Interaction and the Form of Macromolecules in Solutions". The lecturer demonstrated that the molecular weight of the fraction may be determined by a joint determination of the character-istic viscosity and diffusion. B. V. Deryagin, Corresponding Member, AS USSR, M. V. Vol'kenshteyn, Doctor of Physical and Mathematical Sciences and A. I. Kitaygorodskiy, Doctor of Chemical Sciences took part in the discussion.

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SOV/62-59-4-7/42

5(4)

AUTHORS: Gonikberg, M. G., Levitskiy, I. I., Kazanskiy, B. A.

TITLE: Investigation of the Influence of the Hydrogen Pressure on the Rate of the Heterogeneous Catalytic Isomerization of Cyclohexane (Issledovaniye vliyaniya davleniya vodoroda na skorost' geterogenno-kataliticheskoy izomerizatsii tsiklogeksana). Communication 1. Kinetics of the Isomerization of Cyclohexane Over a Tungsten Sulfide Catalyst (Soobshcheniye 1. Kinetika izomerizatsii tsiklogeksana na vol'fram-sul'fidnom katalizatore)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 4, pp 611-616 (USSR)

ABSTRACT: In the present work the isomerization of cyclohexane and methyl cyclopentane on the industrial WS_2 catalyst under hydrogen pressure has been investigated. The first series of experiments was conducted at a degree of dilution of 19-24 $\left(\delta = \frac{H_2}{C_6H_{12}}\right)$ and at temperatures of 320°, 340°, 370°, 400°, and 430° (Table 1). This shows that the isomerization at 320° and 340° becomes weaker

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Investigation of the Influence of the Hydrogen Pressure on the Rate of the Heterogeneous Catalytic Isomerization of Cyclohexane. Communication 1. Kinetics of the Isomerization of Cyclohexan Over a Tungsten Sulfide Catalyst

when the total pressure is increased from 50 to 250 atmospheres. At 370° the yield of products changed only slightly. At 400° and 430° the yields increased strongly. The selectivity of the process showed only a small change with temperature but decreased upon an increase in pressure. To clarify the observed effect another series of experiments was conducted in which the action of the hydrogen and cyclohexane partial pressures on the conversion of cyclohexane was observed. Results obtained during experiments carried out at 430° and 340° with constant contact time, partial pressure, and cyclohexane feed rate but with different hydrogen partial pressures are given in table 2. It is seen that the increase in hydrogen partial pressure has only a small influence on the intensity of isomerization at 430°, whereas this intensity is strongly reduced at 340°. It has been found that the kinetic order of the reaction with cyclohexane in the range investigated equals 0.4. Table 3 gives the results of the series of experiments conducted with cyclohexane at 340° and constant hydrogen pressure. It has been found that the rate con-

Investigation of the Influence of the Hydrogen Pressure on the Rate of the Heterogeneous Catalytic Isomerization of Cyclohexane. Communication 1. Kinetics of the Isomerization of Cyclohexane Over a Tungsten Sulfide Catalyst

stant of the reaction at 430° does not depend on the hydrogen partial pressure. The intensification of the isomerization observed at this temperature upon an increase in total pressure is due to the longer contact time. It has been found that the logarithm of the rate constant of the reaction at 340° decreases linearly upon an increase in hydrogen partial pressure. There are 2 figures, 3 tables, and 4 references, 3 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: July 2, 1957

5(4) SOV/62-59-4-8/42

AUTHORS: Gonikberg, M. G., Zhulin, V. M.

TITLE: Thermal Conversion of Tetrachloroethylene Under Pressure (Termicheskiye prevrashcheniya tetrakhloretilena pod davleniyem). Communication 2. Investigation Under Pressures up to 1870 kg/cm^2 (Soobshcheniye 2. Issledovaniye pri davleniyakh do 1870 kg/sm^2)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 4, pp 617-625 (USSR)

ABSTRACT: In the preceding work (Ref 1) the thermal conversion of tetrachloroethylene under pressures of 10000-24000 atmospheres and at temperatures of 300-350° was investigated and hexachloroethane and hexachlorobenzene were identified. During this work it was not possible to identify the heavy liquid formed in small amounts. For this purpose experiments with larger amounts of tetrachloroethylene were conducted under a lower pressure in the present work. Table 1 gives the results obtained in experiments conducted at 350° in a Nr 1 steel ampoule (Fig) having a volume of approximately 21 milliliters. It is seen 1) that the con-

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Thermal Conversion of Tetrachloroethylene Under Pressure. Communication 2. Investigation Under Pressures up to 1870 kg/cm^2

version of C_2Cl_4 increases upon an increase in pressure, 2) that the hexachloroethane : hexachlorobutadiene ratio in the reaction products increases when the duration of the experiment is prolonged while the temperature remains constant. An experimental series has been conducted to determine the kinetic order. These experiments were carried out in a Nr 2 steel ampoule (volume approximately 31 milliliters) at 350° and with a uniform tetrachloroethylene feed (44.00 g). Experimental results are given in table 2. The data of table 2 have been plotted in the x, τ_o graph (Fig 2). It is seen that under the assumed conditions (350°, 1000-1100 atmospheres) the thermal conversion take place like zero order reactions. Another experimental series was conducted in a steel reactor provided with a "hydraulic seal", a pocket for the thermocouple, and a pressure gauge (Table 3). It has been found that the thermal conversion rate of tetrachloroethylene increases upon an increase in the C_2Cl_4 pressure. The C_2Cl_6 : C_4Cl_6 ratio in the reaction products is almost equi-

Thermal Conversion of Tetrachloroethylene Under Pressure. Communication 2. Investigation Under Pressures up to 1870 kg/cm^2

molecular at low pressure and increases with an increase in pressure. The thermal conversion of tetrachloroethylene is slightly accelerated by the hydrogen pressure; this is due to an increase in the compressibility factor. Table 4 gives the result of a similar experimental series carried out in another reactor. In GIAP MKhP SSSR an approximate determination of the critical temperature and critical density of C_2Cl_4 according to the method of the vanishing meniscus was made. The critical temperature was found to be 338 ± 2° and the critical density to be 0.5-0.6 g/cm^3. This d_{cr} value is in agreement with the data determined for the critical density of hydrocarbon halogen derivatives (Ref 4). Table 5 gives the computed values of the compressibility factors at various pressures and experimentally determined rate constants of the thermal conversion of C_2Cl_4.

A. A. Opekunov, designer, and V. A. Kuznetsov and M. D. Pushkinskiy, mechanics, participated in the work. The authors

Thermal Conversion of Tetrachloroethylene Under Pressure. Communication 2. Investigation Under Pressures up to 1870 kg/cm^2

appreciate the assistance given by I. R. Krichevskiy and N. Ye. Khazanovaof GIAP MKhP SSSR. There are 1 figure, 5 tables, and 16 references, 9 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: July 16, 1957

5(3)
AUTHORS: Gonikberg, M. G., Zhulin, V. M. SOV/62-59-5-24/40

TITLE: Investigation of the Thermal Conversions of Trichloroethylene at High Pressures (Issledovaniye termicheskikh prevrashcheniy trikhloretilena pri vysokikh davleniyakh)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 5, pp 916-922 (USSR)

ABSTRACT: In a short survey the conversion reactions of trichloroethylene known from publications are mentioned (Refs 1 - 9). In an earlier paper by the authors (Refs 11, 12) the thermal conversion of tetrachloroethylene had been investigated, and it was found that at temperatures of 300 - 350° and a pressure of 30000 at hexachlorobutadiene and hexachloroethane are formed, and that the conversion is considerably accelerated if pressure further increases. The present paper gives and explains the results obtained by investigations of the conversion mentioned in the title. The investigations were carried out by a method which has already been described in reference 11. It followed from

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Investigation of the Thermal Conversions of Trichloroethylene at High Pressures

preliminary investigations that trichloroethane, when heated under pressure, is able to undergo self-accelerating thermal conversion. The following substances are obtained by thermal conversion: 1,1,2,4,4-pentachlorobutadiene-1,3 and, in small quantities, asymmetrical tetrachloroethane. The distillation curves of the fractions II and III are shown by figures 1 and 2. Further, the influence exercised by temperature, pressure, and the duration of experiments upon the thermal conversion of trichloroethane was investigated. The results obtained at 200, 230, and 250°, as well as by pressures of 900 - 1270 kg/cm^2 are given in table 1. This list shows that thermal conversion is considerably accelerated by pressure. At a pressure of 25000at and a temperature of190° the self-accelerating reaction sets in which leads to a part-carbonization of the substances. At low pressure the temperature of the beginning accelerating reaction increases. A scheme of the radical chains of the dimerization of trichloroethane,

as assumed to be possible by the authors in the formation of the mentioned substances, is given. (1,1,2,4,4,-pentachloro--butadiene-1,3). There are 2 figures, 2 tables, and 19 references, 2 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: July 16, 1959

BLONSKAYA, A.I.; LOZOVOY, A.V.; GAVRILOVA, A.Ye.; GONIKBERG, M.G.; KAZANSKIY, B.A.

Investigating hydrogenation of lean coals and anthracites with a hydrogen pressure greater than 1000 atm. Trudy IGI 9: 50-61 '59. (MIRA 13:1)

(Coal liquefaction)

SOV/51-6-1-21/30

AUTHORS: Gonikberg, M.G., Sterin, Kh.Ye., Ukholin, S.A., Opekunov, A.A. and Aleksanyan, V.T.

TITLE: Production of the Raman Scattering Spectra at High Pressures (Polucheniye spektrov kombinatsionnogo rasseyaniya pri vysokikh davleniyakh)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 1, pp 109-110 (USSR)

ABSTRACT: To obtain the Raman spectra at pressures up to 2500 kg/cm^2 the authors used apparatus shown in a figure on p 110. A scattering cell 1 consisted of two steel cylinders one on top of the other. The external diameter of the outer cylinder was 160 mm and the diameter of the cell proper was 20 mm. The substance placed in the cell was illuminated through three windows which were at right angles to the cell. These windows are marked 2 in the figure. A fourth window (marked 3) was used to observe the scattered light. Construction of the windows follow Bridgeman's technique described in Ref 5. The smallest diameter of the conical apertures at each window was 7 mm; the angle φ was 45°. The Raman spectra were excited with the blue line of mercury, λ = 4538 Å, produced by a PRK-type lamp. Three diaphragms (marked 5 in the figure) were used to cut out the light reflected by the internal walls of the

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Production of the Raman Scattering Spectra at High Pressures

cell. A spectrograph ISP-51 was used to obtain the Raman spectra of toluene and isopropylbenzene at pressures of 1000 and 2000 kg/cm^2 at room temperature. The photographic plates were exposed for 4-6 hours. No displacement of the Raman frequencies of toluene and isopropylbenzene was observed at these two pressures. The apparatus described may be used also to obtain the Raman spectra of compressed gases. There are 1 figure and 5 references, 4 of which are English and 1 translation of an English work into Russian.

SUBMITTED: July 7, 1958

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5(4)
AUTHORS: Yershov, Yu. A., Gonikberg, M. G., Neyman, M. B., Opekunov, A. A.

SOV/20-128-4-34/65

TITLE: Measurement of the Electrical Conductivity of KJ in Non-aqueous Solvents at High Pressures

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 4, pp 759-762 (USSR)

ABSTRACT: M. G. Gonikberg, V. B. Miller et al. (Ref 1) published, some time ago, a paper on the effect of the solvent (ethyl alcohol, acetone) on the reaction rate of isotope exchange $n\text{-}C_3H_7J + J^-$ at pressures up to 2500 kg/cm^2. The dependence of the dissociation degree of KJ on the pressure was not determined at that time. Now it is done by measuring the electrical conductivity on the assumption that the dissociation degree of KJ can be approximately determined by the ratio $\lambda : \lambda_\infty$. The apparatus is described (Fig 1) which is similar to the one of I. Buchanan and S. D. Hamann (Ref 4). The electrical conductivity of the sample was measured at 1,000 cycles per second (generator of type ZG-10). An oscillo-

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graph of type EO-7 served as zero instrument. The measuring bridge was regulated by the resistance box of type R-58. The measurements were made at 20°. Table 1 shows that the equivalent conductivity of the solutions investigated decreases with increasing pressure while the dissociation degree α of KJ computed from $\lambda : \lambda_\infty$ increases. Table 2 (values of α and k_α = constant of the ionic equilibrium) indicates that k_α in acetone increases more quickly than in ethyl alcohol. This corresponds to the result of reference 1 stating that the dissolution of KJ in acetone is accompanied by a more intense volume contraction than the dissolution in ethyl alcohol. This is also confirmed by the different signs of the volume variation under pressure influence (Table 3). Table 3 compares the values indicated in reference 1 and corrected in the present paper for the constants of the reaction rate of the isotope exchange $n.C_3H_7J + J^-$ at pressures of 1, 1500, and 2500 kg/cm^2. The correction does not change the

qualitative character of the dependence found. There are 1 figure, 3 tables, and 7 references, 2 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)
Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

PRESENTED: April 27, 1959, by N. N. Semenov, Academician

SUBMITTED: April 24, 1959